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Administration Report of the Director of Medical and Sanitary Services for 1932.

(*Dr. R. BRIERCLIFFE.*)

JULY, 1933.

230

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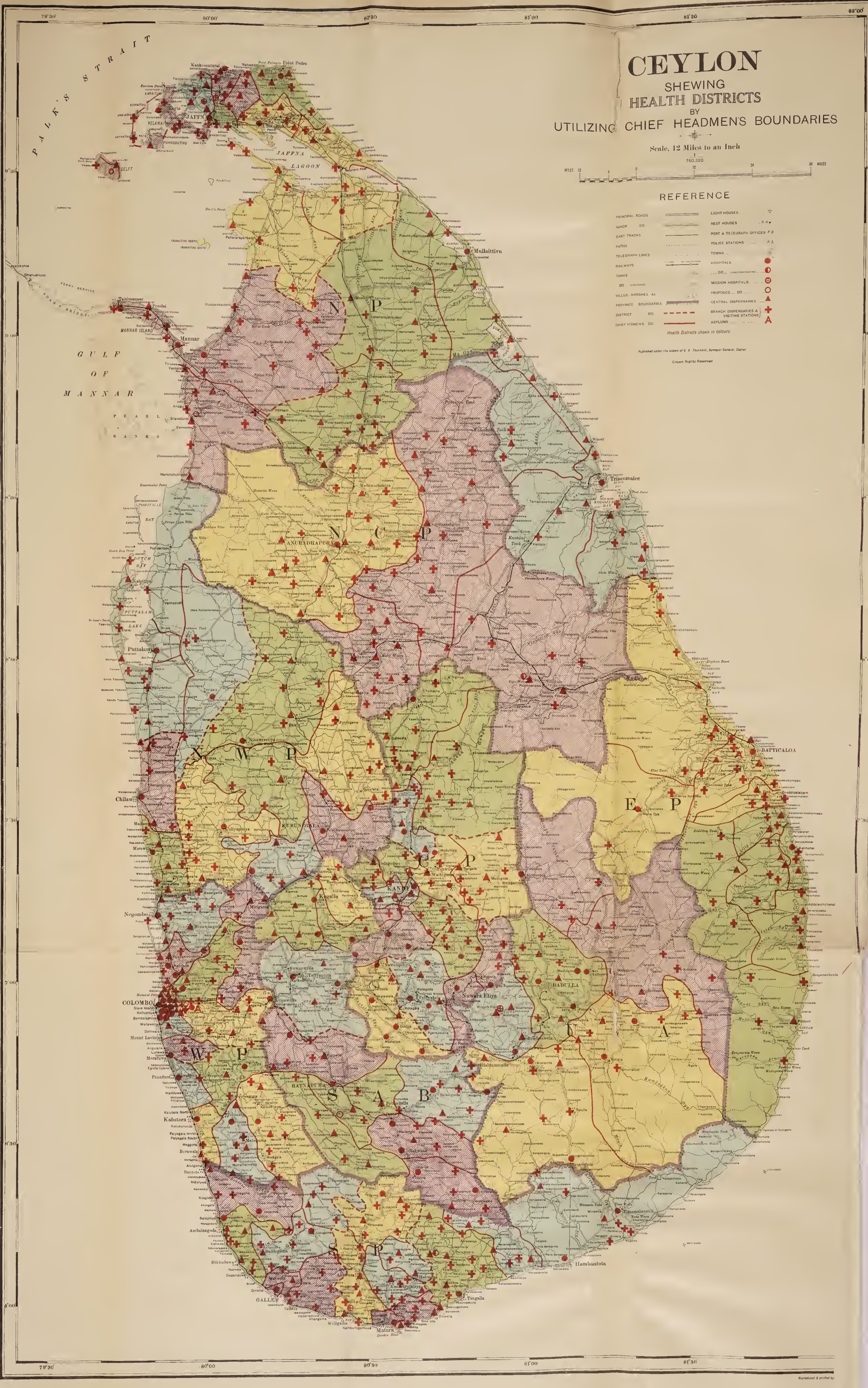

CEYLON
SHEWING
HEALTH DISTRICTS
BY
UTILIZING CHIEF HEADMEN'S BOUNDARIES

Scale, 12 Miles to an Inch

$\frac{1}{760,320}$

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DEPARTMENT OF MEDICAL AND SANITARY SERVICES.

11 SEP 1933

REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES FOR THE YEAR 1932.

TABLE OF CONTENTS.

I.—Administration.

PAGE
(*a*) (1) Staff 5
(2) Promotions, Appointments, &c. .. 7
(3) Officers on Leave .. 8
(4) Special Qualifications .. 8
(*b*) List of Ordinances affecting Public Health enacted during the Year .. 8
(*c*) Financial 9

II.—Public Health.

A.—General Remarks—

Prevalence of Sickness in Different Provinces 10
1.—General Diseases 11

2.—Communicable Diseases—

(1) Plague 13
(2) Cholera 14
(3) Smallpox 14
(4) Chickenpox 15
(5) Diphtheria 15
(6) Measles 16
(7) Mumps 16
(8) Whooping Cough .. 16
(9) Enteric 16
(10) Dysentery 16
(11) Influenza 17
(12) Tuberculosis 17
(13) Leprosy 17
(14) Parangi 18
Tables of Communicable Diseases .. 18
3.—Vaccination 19

B.—Vital Statistics— ..

Decennial Averages .. 19
Estimated Population .. 20
Infant Mortality 20
Causation of Deaths .. 21

III.—Hygiene and Sanitation.

A.—General Review of Work done and Progress made 22

1.—Preventive Measures—

(*a*) Mosquito- or Insect-borne Diseases—

(1) Malaria 22
Anti-Malaria Campaigns .. 23
(2) Dengue 27
(3) Filariasis 27

(*b*) Helminthic Diseases—

Ankylostomiasis .. 27

2.—General Measures of Sanitation—

Conservancy 38
Disposal of Night Soil .. 39
Scavenging and Disposal of Refuse 39
Water Supplies .. 39
Licensed Trades .. 40
Sanitary Inspections .. 41
Offences against Sanitary Regulations 41
3.—School Hygiene 42

4.—Labour Conditions—

Medical Wants on Estates .. 45
5.—Housing and Town Planning .. 48
6.—Food in Relation to Health and Disease 48
7.—Health Units 49
8.—Sanitary Engineering .. 53

B.—Measures taken to spread the Knowledge of Hygiene and Sanitation—

Health Education .. 55
C.—Training of Sanitary Personnel .. 57
D.—Recommendations for Future work .. 57

IV.—Port Health Work and Administration.

Colombo Port 58
Minor Ports 58
Mandapam Camp 58
Tataparai Camp 59

V.—Maternity and Child Welfare.

Infant Mortality .. . 59
Maternal Mortality 60
Stillbirths 60
Ante-natal and Baby Clinics .. 60
Midwifery 60
Maternity Beds in Hospitals .. 61
Public Health Nursing 61
Voluntary Associations and Child Welfare 61
Work of Lady Doctors 61

VI.—Hospitals, Dispensaries, and Venereal Diseases Clinics.

General Remarks 61
Table of Diseases of Out-patients .. 62

Report on Colombo Hospitals—

General Hospital 63
Dental Institute 64
The Ear, Nose, and Throat Department 64
The De Soysa Lying-in Home .. 64
The Victoria Memorial Eye Hospital .. 65
Lady Havelock and Lady Ridgeway Hospitals 65
The Female Venereal Diseases Hospital, Borella 65
Infectious Diseases Hospital (Angoda) .. 66

Report on Outstation Hospitals—

Kandy Hospital 66
Galle Hospital 67
Institutions for Tuberculosis .. 67
Medical Institutions aided by Government 69

Venereal Diseases Clinics at the—

(*a*) General Hospital 69
(*b*) Colombo Port 69
(*c*) Female Branch Hospital, Borella .. 70
(*d*) Kandy Dispensary .. 70

VII.—PRISONS AND ASYLUMS.

PAGE
Prisons 70
Asylums—
  (*a*) Lunatic Asylum, Angoda .. 72
  (*b*) Leper Asylums—
    Hendala 73
    Mantivu 76

VIII.—METEOROLOGY.

Rainfall 76
Temperature 76
Returns 77

IX.—SCIENTIFIC.

(1) Bacteriological Institute .. 77
(2) Pasteur Institute 78
(3) Outstation Laboratories .. 80
(4) Government Vaccine Establishment .. 80
(5) Medical Entomology .. 81
(6) Publications 89

X.—MISCELLANEOUS.

(1) Medical Education 89
(2) King Edward VII. (Memorial) Anti-Tuberculosis Fund .. 91
(3) Civil Medical Stores .. 91
(4) Sale of Opium to Registered Consumers and Vedaralas 92
(5) Building Requirements .. 93
(6) General Remarks 93

CHARTS AND RETURNS.

Charts—
  (A) Chart showing the General Systemic and Preventable Diseases .. 97
  (B) Chart showing Deaths from General Systemic and Preventable Diseases 97
  (C) Chart showing Cases of Infectious Diseases 98
  (D) Chart showing Deaths from Infectious Diseases 98
Hospital Returns—
  (1) Details regarding Hospitals (patients, attendants, &c.) in each Province 99
  (2) Return of Diseases—Cases treated according to Diseases .. 100

MAP.

Map of Ceylon showing Medical Institutions .. *Inserted loose facing page* 3

I.—ADMINISTRATION.

(*a*) (1) Establishment (including vacancies) on December 31, 1932.

Directorate.

1 Director of Medical and Sanitary Services.
1 Deputy Director of Medical and Sanitary Services.
1 Assistant Director of Medical Services.
1 Assistant Director of Sanitary Services.
1 Administrative Secretary.
2 Senior Medical Officers of Health.
1 Accountant.
1 Assistant Accountant.

Medical Side.

1 Medical Superintendent, General Hospital, Colombo.
1 Medical Superintendent, Lunatic Asylum, Angoda.
1 Medical Superintendent, Leper Asylum, Hendala.
1 Medical Superintendent, Civil Hospital, Kandy.
1 Medical Superintendent, Civil Hospital, Galle.
9 Provincial Surgeons.
1 Medical Officer-in-Charge, Anti-Tuberculosis Institute, Colombo.
1 Medical Officer-in-Charge, Lady Havelock and Lady Ridgeway Hospitals, Colombo.
1 Radiologist, General Hospital, Colombo.
1 Pathologist, General Hospital, Colombo.
1 Medical Officer-in-Charge, Dental Institute, Colombo.
62 Medical Officers in Grade I. (4 vacancies).
239 Medical Officers in Grade II. of whom 8 are women (30 vacancies).

Sanitary Side.

3 Inspecting Medical Officers of Estates.
2 Assistants to Inspecting Medical Officers of Estates (Medical Officers in Grade II.).
31 Medical Officers of Health (5 vacancies).
1 Superintendent, Ankylostomiasis Campaigns (Medical Officer, Grade I.).
1 Superintendent, Anti-Malaria Campaign.
3 Medical Officers, Anti-Malaria Campaign (Medical Officers, Grade II.).
5 School Medical Officers (1 in Grade I. of Medical Officers and 4 in Grade II.).
1 Superintendent of Health Education Division.
5 Sanitary Engineers (including 3 Assistant Sanitary Engineers).
1 Sanitary Superintendent (vacant).
38 Sanitary Inspectors, Class I. (2 vacancies).
229 Sanitary Inspectors, Class II. (23 vacancies).
4 Draughtsmen (Sanitary Engineering Division).

Laboratory Staff.

1 Director of Bacteriological and Pasteur Institutes and Vaccine Establishment.
1 Bacteriologist (Medical Officer of Health).
1 Assistant Bacteriologist (Medical Officer, Grade II.).
31 Laboratory Assistants (6 vacancies).
1 Medical Entomologist.
14 Entomological Assistants (2 vacancies).
9 Laboratory Attendants.

Nursing Staff.

Recruited through the Overseas Nursing Association—

8 Matrons.
1 Assistant Matron.
29 Sisters (1 vacancy).

Recruited from Religious Orders—

7 Mothers.
128 Sisters (19 vacancies).

Recruited in Ceylon—

6 Sisters.
1 Relieving Staff Nurse (1 vacancy).
19 Public Health Nurses (3 vacancies).
93 Matrons (15 vacancies).
236 Nurses (20 vacancies).
86 Pupil Nurses.
111 Hospital and Health Unit Midwives.
26 Pupil Midwives.

Clerical Staff.

Head Office—

1 Chief Clerk, Special Class.
3 Clerks, Class I. (1 vacancy).
69 Clerks in Classes II. and III.
1 Stenographer.
1 Despatch Clerk.

Branch Offices—

73 Clerks in the various branch offices.

Apothecaries.

20 Apothecaries in Special Class (1 vacancy).
100 Apothecaries in Class I. (1 vacancy).
295 Apothecaries in Class II. (46 vacancies).
3 Acting Officers (1 vacancy).

Vaccination.

9 Inspectors of Vaccination.
33 Male Vaccinators, Class I.
114 Male Vaccinators, Class II. (21 vacancies).
18 Female Vaccinators (4 vacancies).

Civil Medical Stores.

1 Superintendent and Chief Medical Storekeeper.
1 Assistant Superintendent.
1 Additional Storekeeper.
7 Supervisors.

Opium Branch.

1 Opium Storekeeper.
12 Opium Clerks.
16 Opium Sellers.

Miscellaneous.

3 Hospital Stewards in Special Class.
6 Hospital Stewards in Class I.
39 Hospital Stewards in Class II. (5 vacancies).
1 Sister, X'ray and Electrical Branch.
2 X'ray Assistants, General Hospital.
4 Hospital Stores Clerks.
7 Hospital Admitting Clerks (1 vacancy).
4 Bookbinders.
4 Telephone Operators (1 vacancy).
2 Head Overseers (Sanitary Engineering Division and General Hospital).
9 Hospital Overseers.
1 Agricultural Overseer, Lunatic Asylum.
2 Motor Ambulance Drivers.

Minor Employees.

Depôt Assistants and Cleaners	about 3,500.
Laboratory Cleaners	
Packers	
Peons	
Overseers	
Dispensary Orderlies	
Caretakers	
Male Attendants	
Female Attendants	
Opium Store Servants	
Disinfecting Orderlies	
Tappal Labourers	
Itinerating Labourers	
Latrine Labourers	
Garden Labourers	
Burial Labourers	
Nurses' Ayahs	
Barbers, Dhobies, &c.	

(2) (*a*) **Promotions, Appointments, &c.**

Dr. H. U. Leembruggen was appointed Deputy Director of Medical and Sanitary Services with effect from June 11, 1932, *vice* Dr. L. A. Prins retired. Dr. F. Keyt was appointed Assistant Director of Medical Services and Dr. W. E. de Silva, Medical Superintendent, General Hospital, with effect from June 11, 1932. Dr. W. S. Ratnavale, Dr. D. T. de Kretser, and Dr. R. W. Willenberg were appointed Provincial Surgeons with effect from June 5, 1931, August 31, 1931, and November 1, 1931, respectively. Dr. W. H. Wijenayake and Dr. D. B. de Alwis were appointed Inspecting Medical Officers with effect from September 1, 1932, and August 1, 1932, respectively. Dr. C. O. Perera was appointed Medical Superintendent, Lunatic Asylum, with effect from June 1, 1932, *vice* Dr. Parsons retired. Dr. A. L. Pereira and Dr. H. Ludovici, Dr. A. C. A. Fernando, Dr. W. F. H. Perera, Dr. C. F. O. Panditasekera, Dr. A. Suppiah, and Dr. L. S. L. de La Harpe retired from the service with effect from September 19, 1932, August 1, 1932, May 14, 1932, June 16, 1932, December 16, 1932, September 19, 1932, and September 29, 1932, respectively. Dr. (Mrs.) Manickasingham died on June 18, 1932. Mr. E. Burgess, Bacteriologist, and Mr. W. H. D. E. Pereira, Accountant, retired from the service with effect from November 19, 1932, and September 1, 1932, respectively. Mr. F. E. Loos was appointed Accountant *vice* Mr. Pereira retired. Mr. H. J. L. Leigh-Clare took up duties as Administrative Secretary *vice* Mr. G. M. Rennie transferred.

(*b*) **Honours.**—His Majesty the King was graciously pleased to confer the following honours:—

On New Year's Day.—Miss E. Bond, Matron, General Hospital, to be a Member in the Civil Division of the Most Excellent Order of the British Empire.

On the Occasion of the King's Birthday.—Dr. S. F. Chellappah, Senior Medical Officer of Health, to be an Officer in the Civil Division of the Most Excellent Order of the British Empire.

(3) Officers on Leave.

Nineteen officers of the Department, exclusive of the Nursing Staff, proceeded to Europe on long leave during the course of the year.

(4) Special Qualifications, &c.

The following officers obtained special qualifications during the year:—

(1) Dr. N. Sinnadurai obtained the degree of M.D. (Lond.).

(2) Dr. P. B. Fernando obtained the degrees of M.B., B.S. (Lond.) and the diploma of M.R.C.P. (Lond.).

(3) Dr. A. M. Samarasinghe and Dr. H. N. C. V. Kelaart obtained the D.P.H. (Lond.).

(4) Dr. N. Wijesekera obtained the D.P.H. (Ed.).

(5) Dr. E. C. Gilles obtained the degree of Dr. Science of Hygiene, Johns Hopkins University.

Three officers of the Department obtained the diploma of L.R.C.P. (Lond.), M.R.C.S. (Eng.), and eight obtained the L.R.C.P. & S. (Ed.) L.R.F.P.S. (Glas.).

(*b*) List of Ordinances affecting Public Health enacted during the Year.

Ordinance No. 17 of 1929—an Ordinance to amend and consolidate the law relating to Poisons, Opium, and Dangerous Drugs—was passed by the Legislative Council and assented to by His Excellency the Governor on October 5, 1929. The Ordinance has not been proclaimed yet as certain amendments are still under consideration.

The Ordinance for the Prevention of the Breeding and Harbouring of Mosquitoes passed its second reading early in 1929 and was referred to the Select Committee of the Legislative Council. The Select Committee's report was submitted in due course and was considered by the Governor in Executive Council, and it was decided to ask the Legislative Council to allow its recommittal to the Select Committee for further consideration of the question of the extent of the liability of an owner for anti-malaria measures on his premises. The Ordinance was accordingly recommitted to the Select Committee and, when the new Constitution came into being, was considered by the Executive Committee of Health and is now with the Attorney-General.

The draft of a Milk and Dairies Ordinance to prevent the adulteration of milk was considered by the Executive Committee of Health and is now with the Attorney-General.

The draft Ordinance to amend the Ordinance for the Better Preservation of Public Health and Suppression of Nuisances in Rural Areas, which will enable the Department to enforce the Nuisance Ordinance in rural areas with legal authority, is with the Attorney-General.

The question of introducing a Pure Food and Drugs Ordinance has been referred to the Attorney-General.

Ordinance No. 13 of 1931—an Ordinance to amend the Housing and Town Improvement Ordinance, No. 19 of 1915—was passed by the Legislative Council and assented to by His Excellency the Governor on June 17, 1931, and came into operation from that date. This Ordinance requires every habitable room to be provided with a window or windows of suitable size opening on to an external space.

An amendment to the Chanks Ordinance designed to facilitate the enforcement of the proper sanitation of chank fishing camps on the north-western coast was considered by the Executive Committee and the draft approved.

The Executive Committee also considered a draft Education Ordinance so far as questions of public health were effected thereby. They agreed with the views of the Director of Medical and Sanitary Services and reported accordingly to the Minister for Education.

(*c*) **Financial.**

Actual Revenue and Expenditure for the Financial Year ending September 30, 1932.

REVENUE.

		Rs.
1.	Hospital and dispensary receipts	332,127
2.	Sales of drugs, &c.	8,425
3.	Sales of drugs, &c., under the Medical Wants Ordinance	4,413
4.	Charges for maintenance under the Medical Wants Ordinance	100,917
5.	Opium Sales	199,046
6.	Export duties under the Medical Wants Ordinance	1,286,347
	Total	1,931,275

EXPENDITURE.

		Rs.
1.	Personal Emoluments	6,019,646
2.	Travelling	477,852
3.	Stationery, office furniture, and office requisites	17,039
4.	Rent	78,839
5.	Electric current	80,935
6.	Uniform	24,856
7.	Equipment and contingencies	377,852
8.	Diets	1,492,194
9.	Transport	38,261
10.	Drugs, dressings, disinfectants, and instruments	823,571
11.	Grants	41,803
12.	Rebates payable under the Medical Wants Ordinance	191,400
13.	Epidemics	6,363
14.	Destruction of rats	13,477
15.	Purchase of opium and general expenses	92,504
16.	Earthfilling, drainage, &c.	—
17.	Conservation of cemeteries	831
18.	Removing and relieving sick and destitute persons	17
19.	Incidental expenses	4,488
20.	Equipment for new hospitals and dispensaries	11,838
21.	Cultivation of land attached to the Lunatic Asylum, Angoda	3,149
22.	Ceylonese Nurses in training in England	8,632
		9,805,541

The estimated and actual expenditure for the last seven years has been—

	Budget Estimate. Rs.	Actual Expenditure. Rs.
1925–26	8,965,193	8,598,923
1926–27	10,029,658	9,104,455
1927–28	10,500,274	10,211,104
1928–29	11,009,103	10,216,467
1929–30	11,319,907	10,669,279
1930–31	11,358,152	9,703,755
1931–32	10,795,496	9,805,541

The figures do not include the cost of new buildings and additions and improvements to, and maintenance of, existing ones.

The revenue of the Island during the financial year ending September 30, 1932, was Rs. 84,843,206.60.

II.—PUBLIC HEALTH AND GENERAL EPIDEMIOLOGY.

A.—GENERAL REMARKS.

The Western Province experienced a very healthy year and records the exceptionally low death rate of 16.8 per thousand. Malaria did not occur anywhere in epidemic form. There was less dysentery and rather less enteric than in 1931. Chickenpox and measles were, however, much more prevalent than usual though both diseases were mild in type and had an almost negligible death rate. At the end of the year smallpox broke out in epidemic form following the introduction of the infection from India.

In the Central Province there were no severe outbreaks of malaria such as those which occurred in the Dumbara Valley in 1931. The only malaria epidemic which necessitated special medical assistance was at Meemure in Gandeke korale. The disease, as usual, was most prevalent during the last quarter of the year. A serious outbreak of enteric took place at Gonagantenna early in the year and spread to a number of adjoining villages. Measles occurred very extensively but was mild in type. Although there were no cases of smallpox, mass vaccination was undertaken at the end of the year on account of the danger of infection from Colombo.

The Southern Province suffered from an unusually severe epidemic of malaria in the Hambantota District after the rains of the north-east monsoon and special staff was detailed to provide medical relief. There was less dysentery but more typhoid than in 1931 and smallpox was introduced from Colombo late in December.

In the Eastern Province malaria, as usual, was the most prevalent disease and occurred throughout the year. It was very much more frequent than in 1931 and was at its worst during October, November, and December.

In the Province of Sabaragamuwa malaria, mostly benign tertian type, prevailed in epidemic form with its usual seasonal rise in the last quarter. There was a serious outbreak during the early part of the year in the Balangoda District in villages near the Maha-oya river.

Influenza occurred in several parts of the Province, and chickenpox, dysentery, enteric, and measles were all more common than in the preceding year, but the death rate was only 15.8, as against 19.3 in 1931 and was the lowest recorded in any Province.

In the Province of Uva malaria is endemic in the low-lying flat southern region and is specially prevalent after the rains of the north-east monsoon. Cases of the disease were more frequent than in 1931. Following a drought from May to October the Badulla-oya dried up and the pools left in its bed formed suitable Anopheline breeding places. In consequence the neighbouring villages of Dikwella, Haliela, Yaddehiwela, and Ampitigodawatta suffered severely from malaria in November. There was an increase in the number of typhoid cases which came mostly from the town of Badulla.

The North-Western Province suffered rather more heavily from malaria than in 1931, but there was a notable decrease in the number of cases at Kurunegala where anti-malaria measures have been in operation for some years.

In the Northern Province the heavy rains at the end of 1931 were followed by an extensive outbreak of malaria in the Mannar District. During most of the year there was a severe drought and dysentery and diarrhoea prevailed during the second quarter which is the hottest season. Two cases of smallpox from Colombo entered the Province at the end of December.

In the North-Central Province there was much more malaria than in 1931. The wet months of April and May and October and November were followed by an increased number of cases in June and December. The death rate for this Province was 38.6.

1.—GENERAL DISEASES.

The most prevalent general diseases of hospital in-patients have been rheumatism, intestinal disorders (diarrhoea and enteritis), bronchitis and pneumonia. Year by year the number of patients who seek hospital treatment for cancer is increasing.

The following statement shows the numbers of cases and deaths of these diseases dealt with in hospitals throughout the Island during the years 1928 to 1932:—

	1928.	1929.	1930.	1931.	1932.
Rheumatism—					
Cases	5,043	5,218	4,996	3,418	3,154
Deaths	22	38	42	26	11
Intestinal disorders—					
Cases	4,664	5,724	4,790	3,589	3,516
Deaths	972	1,022	861	640	647
Bronchitis—					
Cases	5,220	5,043	4,552	3,904	4,185
Deaths	190	183	214	193	167
Pneumonia—					
Cases	6,509	6,239	5,592	6,431	6,134
Deaths	2,548	2,288	2,069	2,195	2,043
Malignant growths—					
Cases	687	741	819	896	1,052
Deaths	87	126	107	93	128

The total number of deaths from " Cancer or Malignant Diseases " reported by the Registrar-General in respect of the whole Island was 449 during the year 1932, as compared with 468 in 1931, 460 in 1930, 451 in 1929, and 551 in 1928.

Most of the operable cases of cancer resort to the General Hospital, Colombo, for treatment; of a total of 1,052 cases of cancer dealt with in all the hospitals, 675 were treated in the General Hospital.

On account of the prevalence of betel chewing the site of the disease in the majority of cases was in the region of the buccal cavity, usually the cheek.

The analysis of cases treated is given on page 12.

Cancer Returns of In-patients in Hospitals for 1932.

SINHALESE.

Age.	Sex.	Cheek. C.	Cheek. D.	Tongue. C.	Tongue. D.	Penis. C.	Penis. D.	Breast. C.	Breast. D.	Uterus. C.	Uterus. D.	Palate, Jaw, and Floor of Mouth. C.	Palate, Jaw, and Floor of Mouth. D.	Skin and Extremities. C.	Skin and Extremities. D.	Stomach. C.	Stomach. D	Caecum. C.	Caecum. D.	Rectum. C.	Rectum. D.	Liver. C.	Liver. D.	Intestines. C.	Intestines. D.	Ovary. C.	Ovary. D.	Oesophagus. C.	Oesophagus. D.	Lymph Glands. C.	Lymph Glands. D.	Other Sites. C.	Other Sites. D.	Sites not specified on Notes. C.	Sites not specified on Notes. D.	Total. C.	Total. D.
20-30	Male	8	3	2	—	4	—	—	—	—	—	1	1	2	—	1	—	1	—	—	—	1	1	—	—	—	—	—	—	—	—	4	1	—	—	24	6
	Female	3	—	—	—	—	—	4	—	16	2	1	—	—	—	1	1	—	—	2	1	1	—	—	—	3	1	—	—	1	—	3	1	2	—	37	6
31-40	Male	23	1	12	—	5	—	—	—	—	—	5	—	3	—	1	—	1	1	4	—	8	4	—	—	—	—	1	1	2	—	3	2	—	—	68	9
	Female	7	1	—	—	—	—	20	6	42	6	1	—	2	—	1	—	—	—	1	—	2	2	—	—	2	—	—	—	—	—	4	1	1	—	83	16
41-50	Male	55	5	6	—	14	3	—	—	—	—	7	—	3	—	7	1	—	—	2	—	2	—	1	1	—	—	—	—	—	—	3	2	2	—	102	12
	Female	18	4	1	—	—	—	11	1	50	1	2	1	2	—	5	2	—	—	2	—	1	1	1	1	1	—	—	—	—	—	10	—	2	—	106	11
51-60	Male	50	1	12	3	26	2	—	—	2	—	4	2	4	1	2	1	—	—	4	—	1	1	2	1	—	—	1	—	—	—	5	1	—	—	113	13
	Female	4	2	—	—	—	—	6	—	28	4	2	—	1	—	—	—	—	—	1	1	—	—	2	—	2	—	—	—	—	—	6	1	1	—	53	8
61 and upwards	Male	27	1	5	—	15	1	—	—	—	—	3	—	8	—	1	1	1	1	—	—	—	—	—	—	—	—	3	2	1	—	5	1	—	—	69	7
	Female	6	1	1	—	—	—	6	1	13	—	—	—	2	—	—	—	—	—	—	—	1	—	1	—	1	—	—	—	—	—	3	1	—	—	34	3
	Total ..	201	19	39	3	64	6	47	8	151	13	26	4	27	1	19	6	3	2	16	2	17	9	7	3	9	1	5	3	4	—	46	11	8	—	689	91

TAMILS.

Age.	Sex.	Cheek. C.	Cheek. D.	Tongue. C.	Tongue. D.	Penis. C.	Penis. D.	Breast. C.	Breast. D.	Uterus. C.	Uterus. D.	Palate, Jaw, and Floor of Mouth. C.	Palate, Jaw, and Floor of Mouth. D.	Skin and Extremities. C.	Skin and Extremities. D.	Stomach. C.	Stomach. D	Caecum. C.	Caecum. D.	Rectum. C.	Rectum. D.	Liver. C.	Liver. D.	Intestines. C.	Intestines. D.	Ovary. C.	Ovary. D.	Oesophagus. C.	Oesophagus. D.	Lymph Glands. C.	Lymph Glands. D.	Other Sites. C.	Other Sites. D.	Sites not specified on Notes. C.	Sites not specified on Notes. D.	Total. C.	Total. D.
20–30	Male	3	—	1	—	3	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	1	—	—	—	10	1
	Female	4	1	1	—	—	—	—	—	3	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	1
31–40	Male	17	1	4	—	4	1	1	—	—	—	3	1	2	—	3	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	35	5
	Female	6	1	1	—	—	—	4	1	10	—	2	—	1	—	1	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	27	2
41–50	Male	15	—	1	—	2	—	—	—	—	—	4	1	—	—	—	—	—	—	1	—	1	1	—	—	—	—	1	—	—	—	1	—	1	1	27	3
	Female	8	2	3	—	—	—	3	—	10	2	4	—	—	—	1	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	30	5
51–60	Male	14	—	3	—	2	—	—	—	2	—	2	—	1	—	1	—	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	27	1
	Female	3	—	—	—	—	—	2	—	5	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	2
61 and upwards	Male	10	—	1	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	2	—	1	—	19	1
	Female	—	—	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	1
	Total ..	80	5	15	—	13	1	11	2	31	4	17	2	5	—	7	2	1	—	2	—	5	4	2	1	—	—	1	—	—	—	5	—	2	1	197	22

OTHER RACES.

Age.	Sex.	Cheek. C.	Cheek. D.	Tongue. C.	Tongue. D.	Penis. C.	Penis. D.	Breast. C.	Breast. D.	Uterus. C.	Uterus. D.	Palate, Jaw, and Floor of Mouth. C.	Palate, Jaw, and Floor of Mouth. D.	Skin and Extremities. C.	Skin and Extremities. D.	Stomach. C.	Stomach. D	Caecum. C.	Caecum. D.	Rectum. C.	Rectum. D.	Liver. C.	Liver. D.	Intestines. C.	Intestines. D.	Ovary. C.	Ovary. D.	Oesophagus. C.	Oesophagus. D.	Lymph Glands. C.	Lymph Glands. D.	Other Sites. C.	Other Sites. D.	Sites not specified on Notes. C.	Sites not specified on Notes. D.	Total. C.	Total. D.
20–30	Male	—	—	—	—	1	—	—	—	—	—	1	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—
	Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31–40	Male	2	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	4	1
	Female	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
41–50	Male	1	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	4	—
	Female	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
51–60	Male	2	—	3	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	8	—
	Female	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
61 and upwards	Male	1	—	1	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	6	—
	Female	1	—	1	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—
	Total ..	10	—	7	—	2	—	3	—	—	—	3	—	2		2	—	—	—	2	—	—	—	—	—	—	—	2	1	1	—	1	—	—	—	35	1

C = cases. D = deaths.

2.—COMMUNICABLE DISEASES.

(1) **Plague.**—The following is a statement of cases, deaths and fatality rates for the last five years:—

	1928.	1929.	1930.	1931.	1932.
Cases	67	80	46	50	77
Deaths	60	74	42	48	69
Fatality rates	89·5	92·5	91·3	96	89·6

There have been 77 cases with 69 deaths during the year giving fatality rate of 89.6 per cent., as compared with 50 cases, 48 deaths and a fatality rate of 96 per cent. in 1931.

The distribution of the cases according to locality is as follows:—

Localities.	Cases.	Deaths.
Colombo City	67	61
Kurunegala	9	7
Gampola	1	1

The distribution by months is as follows:—

Months.	Cases.	Deaths.	Months.	Cases.	Deaths.
January	7	7	July	1	1
February	5	3	August	9	7
March	3	3	September	9	8
April	2	2	October	8	7
May	6	5	November	6	6
June	13	13	December	8	7

According to variety of the disease, there have been 54 bubonic and 23 septicaemic cases.

Colombo.—There has been an increase of 20 cases this year over the number that occurred in 1931. Of the 67 cases in 1932, 44 have been bubonic and 23 septicaemic.

Kurunegala.—In the outbreak that occurred in the town there were 9 known cases with 7 deaths. Two of the cases went—one to Kalutara and the other to Puloly in the North—and there developed the disease and died. The case that went to Kalutara arrived there with the disease. The first known case in the outbreak occurred on August 9, and the last on September 26. There is reason to believe that there were 3 deaths in July due to plague. All the cases have been of the bubonic variety. There were 9 infected rats found, the last being on October 21, 1932. The areas involved were Bazaar street and Puttalam road. This outbreak was predicted in 1930 owing to the rat flea survey conducted by Dr. Hirst in that year showing a significant *cheopis* index. The infection to the town was introduced in bags of rice from Colombo where plague is endemic.

A brief description of the action taken to deal with the outbreak will indicate the lines along which outbreaks of bubonic plague with local rat infection are dealt with outside the city of Colombo. As soon as it was determined that there was local infection among rats, first Bazaar street and subsequently Puttalam road were proclaimed as "diseased localities" under the Quarantine and Prevention of Diseases Ordinance. The area was guarded to prevent people getting in or out and goods being taken away without a permit from the proper authority. Arrangements were made to evacuate the area of people, primarily to prevent further human cases and secondarily to enable the buildings to be dealt with. The people were housed in a temporary camp, fed and observed for five clear days, *i.e.*, the days of admission and discharge not being taken into account. The patients were treated in a temporary infectious diseases hospital.

Simultaneously with the other work a rat campaign was organized on a systematic basis and all rats caught were examined for plague locally. When the number of rats caught daily had become almost nil, the evacuation of the buildings of goods was commenced. They were given out under due precautions to see that rats or fleas did not get away.

A pulicide liquid fuel was used for the floor and woodwork that would not be harmed by its application, and for the better class of furniture and for disinfestation of soiled clothing a kerosene oil emulsion made up, by mixing one bottle of septol and $\frac{1}{4}$ bottle of kerosene oil and boiling with $\frac{1}{8}$ lb. of common bar soap and making up to 12 gallons with water. When the buildings had been cleared of goods, building by building was gone over to get rid of harbourages for rats, such as lofts, ceilings, wattle and daub walls, double partitions, &c. All rat holes were fumigated and insanitary parts of buildings were demolished. The tiles were removed for a short period to get the full effect of the sun on the interior of the buildings and then put back.

After the whole area had been thus dealt with, the buildings were tested with Guinea pigs to determine existence of any infection and at the same time the buildings were gone over individually and recommendations made for improvement of each of them. Notices were served on the owners for the necessary improvement before occupation could be permitted.

The contacts after discharge from the camp found other buildings and temporarily started their businesses in them with the goods removed from the infected area.

Gampola.—The fatal case occurred at No. 14, Nuwara Eliya road, which is a rice store, on November 27 in the person of a salesman. The disease was of the bubonic variety. On the day the case was diagnosed as plague a dead rat was found on the roof of the buildings and an examination proved to be positive for plague, indicating local infection among rats. In all 7 infected rats were found, the last being on December 15. Action taken to deal with the outbreak consisted in what has been described under Kurunegala above.

In addition the infected area was enclosed within a fence of corrugated iron sheets to keep the rats from getting into other areas.

(2) **Cholera.**—There were no cases of cholera during the year in the Island. The following is a statement of cholera cases and deaths for the last five years:—

	1928.	1929.	1930.	1931.	1932.
Cases	2	31	—	6	—
Deaths	1	24	—	6	—

(3) **Smallpox.**—The following table shows the number of cases and deaths and fatality rates for the past five years:—

	1928.	1929.	1930.	1931.	1932.
Cases ..	18	7	41	9	106
Deaths ..	1	1	6	3	16
Fatality rates ..	55·5	14·3	14.6	33·3	15·0

During the year there were 106 cases with 16 deaths giving a fatality rate of 15 per cent., as compared with 9 cases with 3 deaths and a fatality rate of 33.3 per cent. in 1931.

The distribution of cases and deaths according to variety of disease is as follows:—

Variety.	Cases.	Deaths.	Variety.	Cases.	Deaths.
Discrete ..	63	4	Modified ..	14	—
Confluent ..	28	11	Haemorrhagic ..	1	1

The influence of vaccination on the incidence of cases and deaths according to variety of the disease is shown in the following table:—

Variety.	Cases.		Deaths.	
	Vaccinated.	Unvaccinated.	Vaccinated.	Unvaccinated.
Discrete ..	56	7	—	4
Confluent ..	17	11	1	10
Modified ..	14	—	—	—
Haemorrhagic ..	—	1	—	1

The distribution according to locality is as follows:—

Locality.	Cases.	Deaths.
Colombo City	71	14
Western Province outside Colombo	17	1
Northern Province	9	—
Southern Province	9	1

Colombo.—Three of the Colombo cases were imported cases and detected on board ship at the Port: one in February and two in November. Two of these were confluent and one discrete. The two confluent cases showed no marks of vaccination. The infection in the case brought in February was acquired in Calcutta while in the case of the other two it was acquired in Persia. All three recovered under treatment. The Colombo outbreak started at the end of November and by the middle of December had become an epidemic. The first case was discovered on the 30th of that month in the person of a first class passenger who had recently returned from India. Two of his contacts acquired the infection from him.

Just after the discovery of this case other cases were discovered in the vicinity of St. John's Market in the Pettah. This was a separate focus from which infection spread to many parts of the Island. The original infection was introduced from India.

Western Province.—The cases that occurred in the Western Province outside Colombo City acquired their infection in Colombo. They were found at the following places: Ja-ela (1), Egoda Kolonnawa (1), Nugegoda (3), Dehiwala-Mount Lavinia (2), Mabola (1), Kahatapitiya (2), Beruwela (2), Kalutara (1), Moratuwa (1), Kesbewa (1), Panadure (1), and Peliyagoda (1).

Northern Province.—The cases that occurred in this Province also acquired their infection in Colombo. They were found at Vavuniya (1), Kayts (2), Jaffna Urban District Council area (6).

Southern Province.—The cases that occurred here as well acquired their infection in Colombo. They were found in the Galle District at Midigama (7) and at Piadde near Bentota (2).

A special vaccination campaign was organized and by the end of the year 112,064 persons had been dealt with.

(4) **Chickenpox.**—6,902 cases, as compared with 4,324 cases in 1931, were reported to the Sanitary Branch during the year with 1 death giving a fatality rate of 0.01 per cent. Of these cases 48.0 per cent. occurred in the Western Province, 20.6 per cent. in the Central Province, 13.5 per cent. in the Province of Sabaragamuwa, 9.9 per cent. in the Southern Province, and 8.0 per cent. in the other provinces. On an average 575 cases were reported each month with the maximum (982) in March and the minimum (379) in June. The incidence shows two peaks, one during March and the other during July.

(5) **Diphtheria.**—The following table shows the number of cases and deaths in the past five years:—

	1928.	1929.	1930.	1931.	1932.
Hospital cases	40	35	34	27	36
Hospital deaths	13	11	9	11	14
Total number of deaths for the Island	20	17	19	18	22

Of the 36 cases treated, 17 were at the Infectious Diseases Hospital, Angoda, 5 at the Lady Havelock Hospital, 4 at the General Hospital, Colombo, 2 in Kandy, and one each in Neboda, Ingiriya, Badulla, Jaffna, Puttalam, Kahawatta, Hambantota, and Nawalapitiya hospitals. Most of the cases were amongst children.

Sixty-one cases, as compared with 41 cases in 1931, were reported to the Sanitary Branch during the year with 16 deaths giving a fatality rate of 26.2 per cent. Of these cases 91.8 per cent. occurred in the Western Province. All the cases were of the faucal variety. On an average 5 cases were reported monthly with the maximum (9) in June and the minimum (2) in February.

(6) **Measles.**—3,700 cases, as compared with 279 in 1931, were reported to the Sanitary Branch during the year with 9 deaths giving a fatality rate of .24 per cent. Of the cases 22.1 per cent. occurred in the Western Province and 66.2 per cent. in the Central Province. On an average 308 cases per month have been reported with the maximum (698) in November and the minimum (51) in January.

(7) **Mumps.**—221 cases, as compared with 199 in 1931, were reported. Of these cases 38.0 per cent. occurred in the Western Province and 42.1 per cent. in the Central Province. On an average 18 cases were reported monthly. The incidence was high in the months of February and March.

(8) **Whooping Cough.**—461 cases, as compared with 166 cases in 1931, were reported with 16 deaths giving a fatality rate of 3.5 per cent. Of these cases 61.4 per cent. occurred in the Western Province and 17.1 per cent. in the Central Province. The incidence shows a rise in the months of March, August, and November. On an average 38 cases were reported monthly with the maximum (84) in November and the minimum (7) in December.

(9) **Enteric.**—The following table shows the number of cases and deaths for the past five years :—

	1928.	1929.	1930.	1931.	1932.
Hospital cases	1,687	2,010	2,478	2,354	2,791
Hospital deaths	368	472	601	631	595
The total number of deaths for the Island	577	736	843	796	783

The actual prevalence of the disease cannot be judged from hospital admissions since many cases resort to ayurvedic treatment and the majority of cases probably are not notified. The number of registered deaths does not indicate the actual mortality from this disease, as some deaths from enteric are undoubtedly included amongst those reported as due to pyrexia. There were 14,514 deaths due to pyrexia in 1932 as against 16,553 in 1931.

2,510 cases were notified in 1932 to the Sanitary Branch of this Department, as compared with 2,317 in 1931, with 468 deaths giving a fatality rate of 18.6 per cent. Of these cases 42.1 per cent. occurred in the Western Province, 21.4 per cent in the Southern Province, and 14.1 per cent. in the Province of Sabaragamuwa. On an average 209 cases were notified per month but the incidence during the year shows a wave throughout the year with the peak during November. Investigation of outbreaks points to the existence of carriers and contact infection. Anti-typhoid inoculation was administered as follows :—

1st dose	6,889	2nd dose	3,037

(10) **Dysentery.**—The following table shows the number of cases and deaths in the past five years :—

	1928.	1929.	1930.	1931.	1932.
Hospital cases	6,190	7,527	7,242	6,320	5,599
Hospital deaths	1,034	1,114	1,052	742	638
Total number of deaths registered for the Island	3,446	4,258	3,616	2,496	2,178

3,157 cases or 56.4 per cent. of the total number of cases were stated to be amoebic and 1,698 cases or 30.3 per cent. bacillary. These figures, however, are not of great value since the distinction was often made on clinical grounds. Only a small percentage of the cases were submitted to complete laboratory investigation and among them bacillary type greatly preponderated (*vide* Section IX.). The mortality rates of amoebic dysentery were 11.2 per cent. and of bacillary 11.7 per cent.

The following provinces contributed the majority of the hospital cases :—

Western Province	2,252 cases with 297 deaths
Province of Sabaragamuwa	499 cases with 76 deaths
Northern Province	822 cases with 49 deaths
Central Province	674 cases with 77 deaths
Province of Uva	449 cases with 47 deaths

26,216 out-patients were treated for this disease during the year, as against 27,301 during 1931. The distribution of out-patient cases is as follows:—

	1930.	1931.	1932.
Western Province	13,706	4,006	3,556
Central Province	3,996	3,554	3,046
Southern Province	2,843	2,472	2,375
Eastern Province	4,232	4,003	4,099
Northern Province	6,015	5,241	5,264
North-Western Province	2,633	2,400	2,283
North-Central Province	2,872	2,291	2,493
Province of Uva	1,247	1,219	1,046
Province of Sabaragamuwa	2,821	2,115	2,054

These figures show that this disease was prevalent, as in the previous year, in sporadic form in all the provinces, but that it has decreased in nearly every province.

It is interesting to note that of the total deaths registered in the whole Island from dysentery the percentage among Indian immigrant labourers on estates has decreased considerably in recent years as the following table shows:—

	1928.	1929.	1930.	1931.	1932
Total number of deaths registered for the Island	3,446	4,258	3,616	2,496	2,178
Total number of deaths among Indian immigrant labourers	1,723	1,384	1,028	706	445
Percentage of deaths of Indian immigrant labourers to the total number of deaths in the Island	50·0	32·5	28·4	28·2	20·4

These figures appear to show that the policy of providing protected supplies of good water on estates and the proper removal of latrine deposits are continuing to achieve satisfactory results.

2,729 cases, as compared with 2,961 in 1931, were notified to the Sanitary Branch of this Department during the year with 305 deaths giving a fatality rate of 11.2 per cent. Of these cases 49.5 per cent. occurred in the Western Province, 12.4 per cent. in the Northern Province, 10.3 per cent. in the Central Province, and 9.9 per cent. in the Province of Sabaragamuwa. On an average 227 cases were reported monthly—the largest number (448) in November and the smallest (97) in May. The type of dysentery that occurred was largely of the bacillary type and investigations carried out point to carriers and contacts as the chief factors in the spread of infection.

(11) **Influenza.**—The following table shows the number of cases and deaths in the past five years:—

	1928.	1929.	1930.	1931.	1932.
Number of cases treated at dispensaries	79,785	107,742	114,056	169,125	142,556
Hospital cases	7,237	4,424	4,374	7,877	5,059
Hospital deaths	101	94	96	178	111
Total number of deaths for the Island	1,958	1,918	2,074	2,393	1,602

(12) **Tuberculosis of the Lungs.**—The following table shows a comparison between the figures for 1932 and the figures for the previous four years:—

	1928.	1929.	1930.	1931.	1932.
Hospital cases	4,120	4,239	3,985	4,245	4,508
Hospital deaths	1,110	648	1,056	1,071	1,087
Total number of deaths registered for the Island	3,380	3,532	3,318	3,174	2,966

Four special institutions—the Anti-Tuberculosis Institute, Colombo (out-door), Kandana Sanatorium, Western Province, and the Kankesanturai Sanatorium, Northern Province, for early cases, and the Ragama Tuberculosis Hospital, Western Province, for moderately advanced cases—are maintained to deal with this disease. A large number of advanced and chronic cases also are treated in the Tuberculosis wards of the General Hospital, Colombo. The number of cases treated at the out-door dispensaries in the Island was 1,499.

(13) **Leprosy.**—During the year 1,216 cases with 96 deaths, as against 1,163 cases with 68 deaths in 1931, were treated at the Government hospitals including

the two asylums which are maintained in the Island for the segregation of lepers under the Leper Ordinance, No. 4 of 1901. A report on these two asylums is given in Section VII.

(14) **Parangi (Yaws).**—The following table shows the number of cases and deaths in the past five years:—

	1928.	1929.	1930.	1931.	1932.
Hospital cases	2,657	2,111	1,640	1,200	1,352
Hospital deaths	2	4	5	4	4
Number of cases treated at dispensaries	34,171	24,841	23,684	24,708	23,208
Total number of deaths for the Island	9	10	10	4	9

During the year under review 11,948 injections were given to 5,963 patients, as against 14,086 injections and 6,862 patients in 1931. Most of the patients attended a second and third time for injections, but some, perhaps satisfied and contented with the immediate relief effected by the first injections, did not attend for the subsequent injections essential to obtain a cure.

The continued and great decrease in the number of cases treated testifies to the success of the work of the Itinerating Medical Officers (of whom there are four now against 13 in 1930 in the various provinces) who have dealt with this disease, which is now well under control everywhere and has almost disappeared in certain provinces.

The following tables show the total cases and deaths from the communicable diseases notified for the whole Island inclusive of the three Municipal towns, and their distribution according to months and provinces:—

Diseases.	Cases.	Deaths.	Fatality Rate, 1932.	Fatality Rate for 1931.
Chickenpox	6,902	1	·01	0·02
Diphtheria	61	16	26·2	29·27
Dysentery	2,729	305	11·2	12·96
Enteric fever	2,510	468	18·6	20·15
Measles	3,700	9	·24	·35
Mumps	221	—	—	—
Pulmonary tuberculosis	2,086	679	32·6	36·0
Whooping cough	461	16	3·5	1·8
Cholera	—	—	—	100·0
Plague	77	69	89·6	96·0
Smallpox	106	16	15·1	33·3

Table showing the Distribution of the Communicable Diseases Notified by Months.

Months.	Chicken-pox.	Diph-theria.	Dysen-tery.	Enteric.	Measles.	Mumps.	Pulmonary Tubercu-losis.	Whoop-ing Cough.	Cholera.	Plague.	Small-pox.
January	564	5	430	179	51	10	148	29	—	7	—
February	674	2	168	189	101	22	167	44	—	5	1
March	982	4	184	207	229	26	173	70	—	3	—
April	742	7	135	200	92	12	161	40	—	2	—
May	439	6	97	204	111	21	152	21	—	4	—
June	379	9	97	199	220	14	186	21	—	14	—
July	600	6	118	212	408	15	189	41	—	1	—
August	476	3	163	201	277	14	187	67	—	8	—
September	474	3	259	183	392	24	125	9	—	11	—
October	440	3	277	258	496	20	225	2	—	8	—
November	538	5	448	263	698	19	200	84	—	7	3
December	594	8	353	215	625	24	173	7	—	7	102

Table showing the Distribution of the Communicable Diseases Notified by Provinces.

Province.	Chicken-pox.	Diph-theria.	Dysen-tery.	Enteric.	Measles.	Mumps.	Pulmonary Tubercu-losis.	Whoop-ing Cough.	Cholera.	Plague.	Small-pox.
Western	3,312	56	1,351	1,058	819	84	1,404	283	—	68	88
Central	1,425	2	281	311	2,449	93	127	79	—	1	—
Southern	682	—	222	538	68	12	249	25	—	—	9
Eastern	32	—	58	32	46	2	14	3	—	—	—
Northern	133	—	338	84	6	11	67	20	—	1	9
North-Central	4	—	50	20	4	—	4	2	—	—	—
North-Western	218	1	151	30	122	17	89	14	—	7	—
Sabaragamuwa	933	1	271	353	113	—	132	1	—	—	—
Uva	162	1	7	84	73	12	—	24	—	—	—

3.—VACCINATION.

The total number of primary vaccination performed during the year under review was 104,195; of these 93,602 were successful and 1,959 were failures. In 8,634 cases the results were not determined. The percentage of successful primary vaccinations was 98.3 in 1930, 98.1 in 1931, and 98.9 in 1932.

Vaccination is carried out throughout the year by trained male and female vaccinators. The former vaccinate in the towns, villages, and estates periodically according to a fixed programme; the latter work in the towns and villages and vaccinate Muslim women and children.

The above figures do not include those of the vaccination campaign which was started in December on account of the epidemic of smallpox.

A vaccine station for the preparation of calf lymph is maintained by Government (*vide* Section IX. of this report).

B.—VITAL STATISTICS.

The following table summarizes the more important vital statistics for the Island since 1871:—

	Average Annual Estimated Population (Mid-year Estimates for 1923–1932).	Average Annual Number of Births registered (Actual Numbers for 1923–1932).	Average Annual Number of Deaths registered (Actual Numbers for 1923–1932).	Excess of Registered Births over Deaths.	Excess of Immigrants over Emigrants.	Average Annual Birth Rate per 1,000 (Annual Rates for 1923–1932).	Average Annual Death Rate per 1,000 (Annual Rates for 1923–1932).	Average Annual Infant Mortality *i.e.*, Deaths of Children under 1 Year of Age per 1,000 Births (Annual Rates for 1923–1932).
1871–1880	2,584,780	70,815	58,836	11,979	23,862	27·4	22·4	—
1881–1890	2,833,104	83,664	69,238	4,426	10,398	28·9	24·0	158
1891–1900	3,295,279	112,204	89,664	22,540	34,070	34·1	27·2	169
1901–1910	3,833,750	145,962	110,347	35,615	17,735	38·0	28·7	180
1911–1920	4,311,328	164,807	132,866	31,941	9,225	38·2	30·8	196
1921–1930	4,920,028	194,611	128,916	65,695	14,880	39·5	26·2	182
1923	4,684,303	181,437	141,891	39,546	41,726	38·7	30·3	212
1924	4,765,578	178,867	122,958	55,909	25,363	37·5	25·8	186
1925	4,846,850	193,261	117,543	75,718	5,554	39·9	24·2	172
1926	4,928,122	203,888	124,884	82,004	*732**	42·0	25·3	174
1927	5,009,394	205,469	113,003	92,466	*11,194**	41·0	22·6	160
1928	5,090,666	213,308	132,334	80,974	298	41·9	26·0	177
1929	5,171,938	198,005	135,274	62,731	*18,541**	38·3	26·1	187
1930	5,253,210	205,106	133,708	71,398	9,874	39·0	25·4	175
1931	5,325,354	199,170	117,453	81,717	*31,581**	37·4	22·1	158
1932	5,386,106	199,370	110,650	88,720	*28,837**	37·0	20·5	162

* Excess of emigrants over immigrants.

The following table gives the statistics of population, number of births and deaths with their rates, and infant mortality rate, according to provinces for the year 1932:—

	Population	Number of Births.	Number of Deaths.	Birth Rate per 1,000 of the Population.	Death Rate per 1,000 of the Population.	Infant Mortality Rate per 1,000 Births Registered.
Western Province	1,463,700	43,557	24,581	29·8	16·8	128
Central Province	979,700	37,499	19,579	38·3	20·0	180
Southern Province	780,400	31,966	15,296	41·0	19·6	131
Northern Province	399,900	13,371	10,859	33·4	27·2	209
Eastern Province	213,900	9,435	6,746	44·1	31·5	227
North-Western Province	551,300	22,902	12,657	41·5	23·0	194
North-Central Province	97,000	4,087	3,744	42·2	38·6	296
Province of Uva	310,900	13,523	7,862	43·5	25·3	180
Province of Sabaragamuwa	589,500	23,030	9,326	39·1	15·8	123

The following return gives the statistics of population (estimated) for the Island for the year 1932:—

	Europeans.	Ceylonese including other Races than European and Indian Immigrants.	Indian Immigrants on Scheduled Estates.	Total.
Number of inhabitants (mid-year 1932)..	9,720* ..	4,715,465 ..	660,922 ..	5,386,107
Number of births during the year 1932 ..	139 ..	174,907 ..	24,324 ..	199,370
Number of deaths during the year 1932..	87 ..	98,132 ..	12,431 ..	110,650
Number of immigrants during the year 1932	107,353		.. 50,869 ..	158,222
Number of emigrants during the year 1932	128,902		.. 58,157 ..	187,059

* In the estimation of the European population for 1932 emigration figures have not been taken into account.

The following are the vital statistics by communities for the Island for the year 1932, compared with those for 1930 and 1931:—

	1930.	1931.	1932.
I.—Ceylonese population (*i.e.*, the total population of the Island, less the European population and the Indian immigrant population on estates) :—			
Estimated population ..	4,767,181 ..	4,630,639 ..	4,767,093
Total births ..	180,130 ..	175,569 ..	174,907
Birth rate per thousand ..	38·1..	37·9..	37·1
Total deaths ..	117,295 ..	103,150 ..	98,131
Death rate per thousand ..	24·8..	22·3..	20·8
Infant mortality (rate per thousand births registered)	172 ..	155 ..	159
II.—European population (including officials) :—			
Estimated population ..	8,969 ..	9,188 ..	9,793
Total births ..	164 ..	160 ..	139
Birth rate per thousand ..	18·4..	17·4..	14·3
Total deaths ..	68 ..	71 ..	87
Death rate per thousand ..	7·6..	7·7..	9·0
Infant mortality (rate per thousand births registered)	18 ..	25 ..	86
III.—Indian immigrant population on estates :—			
Estimated population ..	733,981 ..	685,527 ..	650,153
Total births ..	24,813 ..	23,441 ..	24,324
Birth rate per thousand ..	33·5..	34·2..	36·6
Total deaths ..	16,346 ..	14,231 ..	12,431
Death rate per thousand ..	22·1..	20·8..	18·7
Infant mortality (rate per thousand births registered).	194 ..	184 ..	188

IV.—Total number of infant deaths under one year and infantile mortality rate :—

	Total Deaths.	Mortality Rate per 1,000 Births Registered.
(*a*) for the whole Island	32,356 ..	162
(*b*) in the 36 principal towns ..	4,112 ..	178
(*c*) in the rural areas	28,244 ..	160

The registration of births and deaths is compulsory throughout the Island, but the registration of the causes of deaths cannot be totally relied on as the majority of the registering officers are not medical men. The Registrar-General supplies figures concerning the vital statistics of the 36 principal towns in Ceylon and these figures may be considered more reliable as regards the causes of deaths since the larger portion of them is certified to by Registered Medical Practitioners.

From the tables given above, it will be noted that the death rate in 1932 was rather less than in 1931 among each section of the population. For the third time the death rate among the Indian labourers was less than the rate among the Ceylonese population. The infantile mortality rates among the Ceylonese and Indian populations are still high, and there was a slight increase as compared with 1931 but they remain much below the average for the past ten years, viz., 159 in 1932 as compared with 155 in 1931 for the Ceylonese population, and among the Indian immigrant labourers 188 in 1932 as compared with 184 in 1931. The rate among the European population was higher, 86 in 1932 and compared with 25 in 1931.

Causation of Deaths.—The following table shows the number of deaths registered amongst all classes (Ceylonese, European, and Indian immigrant populations) during the year 1930, 1931, and 1932 under the several classes of diseases:—

	1930.	1931.	1932.
I.—Epidemic, Endemic, and Infectious Diseases—			
(*a*) Epidemic diseases	9,234	7,633	6,610
(*b*) Septic diseases	155	122	133
(*c*) Tuberculous diseases	3,586	3,516	3,275
(*d*) Venereal diseases	239	202	191
II.—General Diseases—			
(*a*) Cancer or malignant diseases	460	468	449
(*b*) Other general diseases	11,438	9,643	9,772
III.—Diseases of the nervous system and organs of the senses	18,580	14,927	13,774
IV.—Diseases of the circulatory system	1,331	1,273	1,321
V.—Diseases of the respiratory system	12,741	12,497	11,039
VI.—Diseases of the digestive system	17,293	14,507	12,861
VII.—Non-venereal diseases of the genito-urinary system	2,130	1,971	1,774
VIII.—The puerperal state	4,381	4,142	3,821
IX.—Diseases of the skin and cellular tissues	10,446	9,367	10,269
X.—Diseases of bones and organs of locomotion	19	24	31
XI.—Malformations	23	20	37
XII.—Diseases of early infancy	10,073	9,129	9,335
XIII.—Old age	6,390	6,001	5,648
XIV.—Affections produced by external causes	2,710	2,695	2,917
XV.—Ill-defined diseases (including pyrexia)	22,480	19,316	17,392

The more notable causes of deaths amongst all classes (Ceylonese, European, and Indian immigrant populations) were the following diseases:—

	1930.	1931.	1932.
(1) Dysentery	3,616	2,496	2,178
(2) Pulmonary tuberculosis	3,318	3,174	2,966
(3) Infantile convulsions	15,445	12,135	10,867
(4) Diarrhoea	9,428	6,930	5,978
(5) Pneumonia	7,963	7,626	6,307
(6) Ankylostomiasis	2,330	2,247	1,955
(7) Dropsy	2,101	1,738	1,819
(8) Anaemia	2,711	1,787	1,805
(9) Intestinal parasites	4,159	3,995	3,562
(10) Puerperal septicaemia	1,597	1,474	1,328
(11) Malaria	2,387	1,661	1,681
(12) Enteric fever	843	796	783
(13) Rickets	4,629	3,860	4,300
(14) Tetanus	338	333	270
(15) Rabies	58	47	52
(16) Cholera	—	6	1*
(17) Influenza	2,074	2,393	1,602
(18) Leprosy	108	68	96
(19) Plague	42	48	70
(20) Scarlet fever	—	—	—
(21) Anthrax	2	—	1
(22) Smallpox	6	3	4
(23) Diphtheria	19	18	22
(24) Parangi	10	4	9
(25) Pyrexia	19,106	16,553	14,514

* This is a case of acute choleraic diarrhoea.

The above figures show that pyrexia and infantile convulsions continue to be the two principal causes of death, followed by pneumonia and diarrhoea.

The following table shows the principal causes of deaths amongst Indian immigrant population on estates:—

	1929.	1930.	1931.	1932.
(1) Dysentery	1,384	1,028	706	445
(2) Debility	2,817	2,661	2,398	2,558
(3) Diarrhoea and enteritis	1,349	1,080	846	663
(4) Pneumonia	2,589	2,077	1,949	1,422
(5) Ankylostomiasis	1,237	1,186	1,019	878
(6) Infantile convulsions	1,538	1,166	1,023	967
(7) Dropsy	94	74	60	32
(8) Pulmonary tuberculosis	327	306	283	254
(9) Anaemia	63	45	60	33
(10) Other diseases	6,984	6,723	5,887	5,179

From the above figures it is evident that debility, pneumonia, ankylostomiasis, infantile convulsions, dysentery, and diarrhoea are the chief causes of death amongst Indian immigrant labourers.

The mortality rates at different age periods in Ceylon in 1932 as compared with corresponding rates in England and Wales in 1931 are given below:—

	Percentage of Total Deaths.	
Age Periods.	Ceylon.	England and Wales.
Under 5 years	46·0	12·2
5 years and under 10	4·2	1·4
10 do. 15	2·0	1·0
15 do. 20	2·7	1·8
20 do. 25	4·3	2·2
25 do. 35	8·6	4·3
35 do. 45	6·7	5·7
45 do. 55	5·9	9·8
55 and upwards	19·6	61·6
	100·0	100·0

These figures illustrate very clearly the relatively early ages at which death usually takes place in Ceylon as compared with a country where, by the public health efforts of many years, a great prolongation of life has been brought about.

III.—HYGIENE AND SANITATION.

A.—GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

Vacancies that occurred in the grade of Sanitary Inspectors were not filled as a retrenchment measure; it was therefore necessary to combine the ranges of certain rural Sanitary Inspectors and give them larger areas. The work in their areas had in consequence to be restricted to control of infectious disease and supervision of sanitation in the more important villages.

Both in Health Unit areas and in the districts special attention was paid to the development of Maternity and Child Welfare work which is very popular with the people.

General sanitation has been maintained satisfactorily both in urban and in rural areas in spite of the reduction of personnel, the extension of the hours of field work of Sanitary Inspectors helped considerably in this direction.

The division of Colombo District C into two areas under two Medical Officers of Health has enabled health work to be developed on Health Unit lines much to the benefit of the inhabitants of these thickly populated areas.

1.—PREVENTIVE MEASURES.

(*a*) Mosquito- or Insect-borne Diseases.

(1) **Malaria.**—Malaria is the most prevalent disease in the Island. There were 32,696 cases admitted as in-patients to hospitals and 1,506,194 cases treated at dispensaries and out-patient departments of hospitals. Benign tertian

malaria was the common form of the disease. The mortality among the hospital admissions was very low, as it was last year. There were 640 deaths from the disease in its acute stages—usually the cerebral type of malignant tertian malaria —and 158 deaths were attributed to malarial cachexia. The number of malaria cases treated annually in hospitals and dispensaries for the last ten years is as follows:—

Year.	Cases treated in Hospitals	Percentage of the Total Number of Patients treated in the Hospitals.	Cases treated in Dispensaries.	Percentage of the Total Number of Patients treated in the Dispensaries.
1923	34,522	18·3	1,193,225	43·5
1924	26,856	15·2	925,476	37·0
1925	22,600	12·0	785,903	33·3
1926	29,334	14·2	1,061,457	36·9
1927	25,146	12·5	865,594	31·4
1928	44,356	19·7	1,542,029	44·2
1929	37,591	17·8	1,629,586	44·6
1930	36,901	18·0	1,722,210	45·2
1931	27,714	14·4	1,419,807	38·2
1932	32,696	15·7	1,506,194	38·0

The following table shows the hospital admissions on account of malaria in the different provinces for the past three years:—

	1930.		1931.		1932.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo	2,742	151	623	45	1,646	70
Western Province	3,634	72	2,774	72	2,175	38
Central Province	5,541	86	3,869	73	3,703	57
Northern Province	3,210	53	2,266	50	3,800	81
Eastern Province	1,243	20	876	16	1,264	19
Southern Province	3,088	85	2,474	61	2,497	73
North-Western Province	3,895	157	2,702	90	3,431	102
North-Central Province	1,851	33	1,468	26	2,071	20
Province of Uva	4,391	54	4,280	52	6,391	74
Province of Sabaragamuwa	7,236	126	6,334	125	5,683	102
Lunatic Asylum	70	4	48	5	35	4
	36,901	841	27,714	615	32,696	640

Many cases of malaria in villages remote from hospitals and dispensaries were treated by Itinerating Medical Officers of the Parangi Campaign whose scope of work was extended in 1927 when they were provided with drugs, &c., for the treatment of prevalent diseases.

12,029 lb. and 2,118,600 tablets of quinine, which cost Rs. 272,360 were issued free through various agencies for curative and preventive purposes.

Anti-Malaria Campaigns.—The same anti-malarial measures as in 1931 were carried out in the various centres of work, details of which are given below.

Changes have been effected in the field administration as a result of retrenchment measures. Two Medical Officers of the Anti-Malaria Campaign, reverted to the medical service proper and their work was taken over by two Medical Officers of Health, and two Medical Officers in the Campaign are acting as Medical Officers of Health in addition to their usual malaria duties.

Special visits were made by the Superintendent, Anti-Malaria Campaign, and the Medical Entomologist to the region of Polonnaruwa and Minneriya to study malaria conditions prior to the institution of colonization schemes.

The Railway Station of Maho was taken up and, in addition to anti-malaria work, general sanitary measures have been effected.

Anuradhapura.—In August, 1923, the spleen rate of the children in town reached the high figure of 56.2 per cent. while in 1932, the rates obtained were 17.9 per cent. in February and 12.7 per cent. in October. During the February examination the high rate of 51.4 per cent. was obtained from children living outside the town area while in October the rate given by these children was 46.2 per cent. It is beyond doubt that the results of anti-malaria work in

Anuradhapura have considerably altered the malaria picture. Considerable headway has been made in eliminating breeding places and if further and more intensive co-operation could be obtained from householders and others in the prevention of creating fresh and additional breeding places of mosquitoes both the work and the money spent would bear better fruit. There was no change of policy during this year with regard to anti-malaria measures in this town.

His Excellency the Governor visited the office of the Anti-Malaria Campaign and made the under-mentioned entry in the Visitors' Book:—

> "I was most interested to see the results of the Anti-Malaria Campaign since its inception in 1923. The slow but steady progress achieved during the last 8/9 years is most encouraging and reflects great credit on Dr. Handy and his assistants. I am very sorry that owing to lack of funds the intensive Campaign cannot be kept up during the coming financial year. As soon as the financial situation improves there is no object on which funds can more usefully be spent than in the steady elimination of the malarial mosquito."

January 13, 1932. (Sgd.) GRAEME THOMSON.

Quinine Distribution.—Systematic quinine distribution is carried out among school children before, during and for a short time after the usual fever season. 4,361 five-grain tabloids and 6,445 three-grain tabloids of quinine were administered during the year to school children and to labourers as a prophylactic measure. An investigation is being carried out with regard to the efficacy of Totaquina as a prophylactic against malaria. The children in the Convent, Sinhalese and N. M. S. Tamil schools were given Totaquina, while the children in the other schools were given quinine. This investigation will be completed in March, 1933.

Minor Filling.—The filling of some of the smaller breeding places was done by the convicts throughout the year and by the maintenance gang during the dry season. Sixty-four breeding places were filled during the year with 360 cubes of earth. A large quantity of earth for filling was made available from the excavations of the Archæological Department in their reservation along Green Path road.

The Buddhist Priest of Ruanwelisaya also very kindly allowed the Anti-Malaria Department to remove earth from the mounds surrounding the Dagoba to fill low-lying areas. Since no funds were available for the transport of earth, the filling has been very slow, and all the available earth has not been made use of yet. The earth was transported by the convicts in four hand carts, three of which were lent by the Public Works Department.

A disused irrigation channel about 250 feet long adjoining the Railway Goods Shed and the surrounding low-lying areas were filled by the convicts with spoil earth and charcoal supplied by the Railway.

Town refuse was also made use of for filling during July and August and two extensive low-lying areas were filled up.

Halpanu-ela.—The Halpanu-ela was greatly damaged near its commencement after the heavy rains at the end of December, 1931. The damaged portions were repaired by the convicts in the manner suggested by the Sanitary Engineer. The total cost of maintenance was Rs. 1,114.62.

Totuwila-ela.—The built inverts of the scupper drains were damaged after the rains of December, 1931. Nineteen old inverts were rebuilt and 5 new inverts of scupper drains were newly constructed.

Oiling.—This measure has been carried on with the same degree of intensity as before. All breeding places are regularly oiled and the total cost of such operations amounted to Rs. 6,560.81. The number of situations treated totalled 33,849, the cost of labour being Rs. 1,297.75.

Fish Introduction.—The results of the introduction of "millions" into wells in sections 1 and 2 in 1931 were found to be very satisfactory and this year all the wells in the area of control were stocked with millions. In addition to the wells, all the permanent ponds in the area of control were also stocked with millions and 100 per cent. efficiency was maintained in these ponds throughout the year. The stocking of the permanent ponds with millions has reduced the consumption of oil to a great extent. 149 built wells, 38 unbuilt wells, and 21 ponds were stocked with millions during the year.

Labour Force.—Thirty-three labourers, 3 kanganies, and 1 overseer were employed for oiling and maintenance work. Seven out of the 33 labourers were discontinued at the end of February, 1932, owing to inefficiency and these were not replaced until November 1, when more labourers were wanted with the onset of the rainy season. The convicts were utilized for minor filling and repairing the Halpanu-ela and the Totuwila-ela. The strength of the convicts brigade lent for anti-malaria work has been reduced during this year.

Chilaw.—The incidence of malaria was measured by spleen examinations of children attending school and also of those not attending school. In February, of 1,068 school children only 49 had enlarged spleens (4.6 per cent.), while among 110 children who do not attend school the spleen rate was 16.4 per cent. The rate among school children obtained in February, 1930, was 12.3 per cent. and 12.1 per cent. in February, 1931. The reduced rate in 1932 is very satisfactory and bears out the opinion of the residents that malaria has appreciably decreased in Chilaw town.

The cost of oiling work at Chilaw amounted to Rs. 8,472.13, the cost of labour being Rs. 3,917.48 and materials Rs. 4,554.65. The oiling work was very efficiently performed, the efficiency rates being never below 90 per cent.

In addition to the gala wells treated a few pools and ponds were included in the Paris Green programme of work. There are still a large number of wells which are not being sprayed though efforts were made on several occasions to persuade the owners to permit treatment of their wells. The total cost was Rs. 691.71, materials costing Rs. 51.23.

Quinine distribution was carried out in the six schools in Chilaw town. A total of 13,141 five-grain tablets and 17,875 three-grain tablets were used in the schools and 2,242 five-grain tablets and 200 three-grain tablets were distributed to the towns people when requested.

Fish work was undertaken and its distribution into wells has been satisfactory. 1,669 top-minnows were introduced into 118 wells in six sub-sections of the town.

A meeting of owners of gala wells was held at the Urban District Council Office during the latter part of the year to impress upon them that the spraying of Paris Green on the water in their wells would not, in any way, effect their plantation. This " talk " had some effect as a good many permitted their wells to be treated.

The Chairman, Urban District Council, has issued notices to owners to have their abandoned gala wells filled up within the next twelve months.

The Medical Officer of Health was away in Colombo for a week in December for training in anti-malaria work.

As a retrenchment measure the offices of the Medical Officer of Health and Anti-Malaria Campaign are now housed in the Anti-Malaria Campaign building. This change took place on November 1, 1932.

Kurunegala.—Malaria control measures have been in operation in this town since February, 1928, and were continued successfully during the year under review. No Paris Green work was done.

The principal control measures adopted were oiling of all breeding places, maintaining, and clearing of all drains, elas, filling, and draining of borrow pits, quarry pits, marshes, pools, and abandoned wells, and the introduction of fish into wells.

Oiling.—An average of 25 gallons a day was used on all breeding places, such as ponds, pools, borrow pits, trenches, elas, quarry pits, and drains with very satisfactory results. The average efficiency rate being as high as 90 per cent. The treating of the tank edges with oil was discontinued from December, 1931. The cost of oiling amounted to Rs. 4,491.13, the cost of labour being Rs. 2,220.53 and materials Rs. 2,270.60.

Filling.—Minor filling was performed on a large scale during the year under review. 562 breeding places amounting to 180,323 cubic feet consisting of marshes, swamps, borrow pits, quarry pits, trenches, pools, pot holes, and abandoned wells were permanently filled. The cost of filling amounted to Rs. 2,349.43.

Quinine Distribution.—Quinine bisulphate was administered in tablet form to all the school children throughout the year, each boy or girl being treated on two successive days in the week. The Anti-Malaria Campaign labour force was similarly treated. During the year 328,262 grains of quinine were administered. Continued and vast improvement in school attendance has been a result of such administration.

Rock Blasting.—As a permanent measure rock blasting was done for the first time in Kurunegala during the months of August and September with campaign labour which cost Rs. 84.77.

Fish Distribution.—Our fish nursery has helped considerably in restocking the town wells with " millions ". The two mosque tanks in section 6A were tried as nurseries but owing to the frequent cleaning out of these tanks, which are out of our control, the fish have invariably disappeared.

Incidence of Malaria.—The incidence of malaria as determined by the examination of school children has been very satisfactory. Out of a total of 795 children palpated for splenic enlargement in February, 1932, a rate of 6.9 per cent. was obtained as against a rate of 14.8 per cent. in the corresponding month of the previous year. During October, 1932, examination of 465 children yielded a rate of 11.6 per cent. It must be pointed out here that the second examination was done partly by the Medical Officer of Health in charge of works and partly by the Superintendent, Anti-Malaria Campaign, which may account for the slightly enhanced rate. In October, 1931, a rate of 11.0 per cent. was obtained among the school children examined. The spleen rate in February, 1929 (before work was commenced) was 37.0 per cent.

Badulla.—The examination for enlarged spleens among children attending schools was carried out in April and November. The totals examined were 1,015 and 1,017, respectively. The spleen rate in April was 1.9 per cent. and in November 3.63 per cent. A census of spleen enlargements among the non-school-going children gave a rate of 2.13 per cent. in April. Special attention has been paid to *A. culicifacies* breeding grounds in the river-bed and in such places as determined by the entomological survey. The cost of labour was Rs. 5,015.53 and of materials Rs. 2,104.62.

The Medical Officer, Anti-Malaria Campaign, has been carrying out additional duties as Medical Officer of Health during 1932.

Puttalam.—The spleen rate in February, 1930, was 49.5 per cent. while in February, 1932, it had fallen to 16.2 per cent. In October, 1932, the rate was maintained at 16.3 per cent. The reduction has been very marked and a considerable measure of success is attributed to the distribution of " millions " into the pottery wells and the useful surface drainage put in by the Division of Sanitary Engineering.

During the year under review temporary measures such as oiling and introducing fish " millions " to wells were carried on. With the exception of wells and paddy fields under cultivation all other breeding places were treated with oil once a week. Permanent measures in the nature of filling were done in sections 1A and 15 and semi-permanent drainage in the nature of opening up of new channels and deepening the old existing drains and improving them were also done.

The number of applications of oil totalled 22,501, cost of labour being Rs. 1,386.06 and that of materials Rs. 3,371.20.

Filling has been extensively done, 693 borrow pits, 75 coconut trenches, 11 swamps, and 335 pools being dealt with permanently.

The cost of labour for this work was Rs. 3,039—the materials costing nothing.

Quinine distribution was systematically carried out, a total of 13,201 tablets being used.

During the year under review 2,451 examinations of wells gave a rate of only 8.5 per cent. as breeding anophelines. The successful distribution of "millions" into wells has far exceeded our expectations.

Trincomalee.—Work has been very satisfactorily maintained. The maintenance of drains and channels, kernies, and tanks was performed once a week and improvement has also been effected by the filling of pits and low-lying areas.

The total cost of the work from December, 1931, to November, 1932, was Rs. 4,088.04.

Mahara Jail.—The monthly average rate of malaria cases among the prisoners was 9.8 per cent. as against 1.0 per cent. in 1931 and 37.4 per cent. in 1922.

The usual measures were carried out and maintained satisfactorily. Experiments were carried out by the Sanitary Engineer with copper sulphate to eradicate weeds, &c., in the bathing tank.

Railway Anti-Malaria Work.—In addition to the stations of Polgahawela, Potuhera, and Rambukkana, it was decided to include Maho in the list of stations where anti-malaria work should be carried out. Both anti-malaria work and general sanitary measures (scavenging, &c.), have been operative in Maho since February. Considerable improvement has been effected, the spleen rate in December, 1931, being 16.7 per cent. as against 40 per cent. in the corresponding month of 1930.

Among the town children, 18 examined gave only 1 positive—5.5 per cent.—as against 52.3 per cent. among 42 examined in December, 1931.

Maintenance of past work and systematic oiling has been carried out at the other stations.

The cost of work has been Rs. 7,053.65 for labour and Rs. 558.93 for materials.

Kataragama.—Anti-malaria measures in connection with the Esala Festival were carried out as in the past. The festival commenced on July 4 and was of a fortnight's duration. Anti-larval measures and quinine distributions were begun on May 17, an experienced Sanitary Inspector being detailed to carry out this work. In addition to these measures, quino-plasmoquine was successfully administered to the residents, traders, and beggars daily for one week prior to the commencement of the festival with a view to reducing the number of parasite-carriers as much as possible.

Colombo.—Special investigations were carried out at Minneriya in association with the Medical Entomologist and in connection with the proposed colonization scheme.

Dengue.—There was no epidemic of dengue during 1932. Eleven cases were admitted to hospitals (of which 6 were in the General Hospital) as against 24 in the previous year.

Filariasis.—Twenty-one cases of filarial diseases were admitted to hospitals, and 470 cases were treated as out-patients (of which 93 were in the Southern Province, 110 in the Northern Province, 152 in the Province of Sabaragamuwa, 81 in the North-Western Province, and 34 in the other Provinces) during the year 1932.

The Medical Entomologist carried out at Toppur, near Trincomalee in the Eastern Province, an investigation into this disease, details of which are given in section IX. (5).

(*b*) HELMINTHIC DISEASES.

Ankylostomiasis.—The following table shows a comparison of the 1932 figures with the figures for the previous five years:—

	1927.	1928.	1929.	1930.	1931.	1932.
Number of cases at dispensaries	170,818..	177,372..	178,041..	171,375..	246,620..	303,769
Cases admitted to hospitals ..	12,600..	12,921..	12,129..	10,288..	9,902..	12,421
Total number of deaths in hospitals	789..	941..	849..	857..	724..	679
Total number of deaths registered for the Island ..	1,943..	2,161..	2,172..	2,330..	2,247..	1,955

Ankylostomiasis Campaign: *Introduction.*—The year 1932 has been one of marked progress in the work of the ankylostomiasis campaign in that the largest number of treatments in a single year, since the inception of the campaign in 1916, was given during this year; while at the same time the cost of the campaign on account of the retrenchment effected at the end of 1930 has also been considerably diminished. The number of deaths due to ankylostomiasis registered in the Island for the year has been 1,955, the average for the previous six years being 2,162.

Administrative Organization: Personnel.—The campaign staff remained the same as mentioned in my last year's report, viz., one Superintendent, two Clerks, one Office peon, thirty-two Dispensers attached to medical institutions including one at the Mandapam Camp, and eight Microscopists and two Laboratory attendants employed at the Central Laboratory of the campaign at Colombo.

Scope of the Campaign Programme.—The main responsibility for treating schools, villages, and estates for ankylostomiasis was placed on the District Medical Officers and the Apothecaries-in-charge of sub-districts; in certain areas the Medical Officers of Health and School Medical Officers took up treatment of schools while the Assistant Inspecting Medical Officers treated some of the estates they inspected. In health unit areas the whole treatment work in the field devolved on the Medical Officers of Health.

The work in the field consisted of lectures and talks on prevention and control of hookworm disease, collection of specimens before and after treatment of as many persons as possible and the care of these treated for a period of not less than twelve hours.

Officers in charge of hospitals and dispensaries were expected to treat at least 33 per cent. of the persons attending for out-door treatment, and in the wards, 75 per cent. of the admissions.

In addition to the estate labourers treated at the out-door dispensaries and in the wards, for which no separate statistics were kept, immigrants to Ceylon estates were treated at Mandapam Camp before they landed in Ceylon, and on the estates by the departmental officers or by the estate dispensary staff, the latter being supervised by the District Medical Officers in many instances.

Procedure of the Campaign.—The following procedure is adopted in order to place treatment within the reach of all the people:—" Anky " dispensers were attached to hospitals and dispensaries for 3, 6, or 9 months according to the size of the area and the response of the people to treatment. The coastal districts on the west of Ceylon, where the heaviest hookworm infection occurs and which are very densely populated, had more than one dispenser working throughout the years 1931 and 1932 in contrast to the former hurried visits of the campaign itinerating units once in eighteen months or so.

The officers in charge of hospitals and dispensaries make out a programme of treatment and write to the Government Agent or Assistant Government Agent, as the case may be, asking for the co-operation of the headmen in village treatment. For schools, the officers concerned in supervision of treatment arrange with the Head Master or local manager, through the dispenser, dates for lectures and treatment. If there are estates in the area, an attempt is made to treat as many estates as possible while the campaign dispenser is in that area; in other cases, estates are arranged by the District Medical Officers or Apothecaries who are supplied with a dispenser on request. Similarly, Assistant Inspecting Medical Officers arrange with Superintendents of estates which they intend visiting, dates for treatment and ask the campaign office for the supply of a dispenser.

It was decided that mass treatment should be carried out by health units as a seasonal activity in a limited area and that they should repeat a similar programme in another area next year, the whole of the Health Units area being covered in two or three years. Campaign dispensers were, therefore, supplied to health units at the request of the Medical Officers of Health concerned.

Work Accomplished.—Treatment programme of the campaign was as in previous years carried out through the following agencies:—

(1) Medical Institutions,
(2) Campaign dispensers,
(3) Health Units,
(4) Mandapam Camp, and
(5) Estate Medical Staff.

TABLE I.

Treatments by all Agencies in 1932 and 1931.

Agencies.	Treatments, 1932. First.	Subsequent.	Total.	1931. Total.
Hospitals and dispensaries	1,210,848	116,778	1,327,626	997,248
Campaign Dispensers :—				
(1) School children	80,802	56	237,294	159,526
(2) Estate labourers	86,607	—		
(3) Villagers	69,751	78		
Health Units :—				
(1) School children	13,414	—	26,826	17,689
(2) Estate labourers	2,111	—		
(3) Villagers	11,301	—		
Mandapam Camp	49,276	—	49,276	64,086
Estate staff	156,179	30,037	186,216	167,857
Total	1,680,289	146,949	1,827,238	1,406,406

There is an increase of 420,832 treatments over those of 1931 and of 253,283 over 1927, the year which previously held the highest record for treatments. 1,680,289 persons out of a population of 5,306,900 in the Island or roughly one person in three received at least one treatment.

(1) *Government Hospitals and Dispensaries.*—Whether by treatment of those attending medical institutions as in-door or out-door patients, or by supervising the treatments in schools, villages, and estates with or without the aid of the campaign staff and on some estates with the aid of the estate medical staff, the officers connected with the medical institutions of the country were responsible for over 85 per cent. of the treatments. The major portion of their work is shown in the next table.

TABLE II.

Ankylostomiasis Treatments at Government Institutions during the Year 1932.

Province.	Attendanee. First.	Subsequent.	Total.	Treatments. First.	Subsequent.	Total.	Per Cent. of Total Treatments to 1st Attendance.
Sabaragamuwa	338,594	171,607	510,201	132,230	12,410	144,640	42·7
Central	455,168	179,955	635,123	168,052	18,276	186,328	40·9
Southern	615,574	404,235	1,019,809	224.821	25,807	250,628	40·7
Uva	181,404	52,934	234,338	57,472	3,794	61,266	33·8
Western	796,865	491,479	1,288,344	233,432	28,545	261,977	32·9
Northern	328,060	243,402	571,462	96,404	10,228	106,632	32·1
Eastern	279,376	120,378	399,754	68,623	3,393	72,016	25·8
North-Central	272,544	54,290	326,834	63,127	2,017	65,144	23·9
North-Western	754,425	235,234	989,659	166,687	12,308	178,995	22·4
Total for 1932	4,022,010	1,953,514	5,975,524	1,210,848	116,778	1,327,626	33·0
Total for 1931	3,906,212	2,033,978	5,940,190	882,428	114,820	997,248	22·6

The percentage of treatments to first attendance has risen from 22 per cent. in 1931 to 33 per cent. in 1932. The Lady Havelock Hospital, Colombo, treated 92 per cent. of the admissions there. Treatments have considerably improved in quality and a genuine attempt is made to treat as many persons as possible.

The figures under this head include 34,299 treatments given by officers outside their institutions without the aid of the campaign staff and 1,942 by the Lady Medical Officer of Puttalam. In the former 22,393 treatments were given on estates with the help of the estate dispensers.

(2) *Campaign Dispensers.*—The following is the statement of the work done by the campaign staff:—

Table III.

Ankylostomiasis Treatments given by the Campaign Staff in Schools, Estates, and Villages during 1932.

Province.	Census of School Children.	Treatments.				Per Cent. of School Children treated to Census.
		School Children.	Estate Labourers.	Others.	Total.	
Central	20,654	15,610	57,455	12,060	85,125	
Western	48,583	24,357	2,860	16,106	43,323	
Sabaragamuwa	6,424	4,590	15,507	5,051	25,148	
Northern	35,765	14,956	—	3,480	18,436	
Eastern	6,145	5,492	180	11,912	17,584	
Southern	11,208	6,795	1,768	8,492	17,055	
Uva	2,479	1,873	8,757	4,085	14,715	
North-Western	7,358	6,106	80	4,854	11,040	
North-Central	1,263	1,079	—	3,789	4,868	
Total for 1932	139,879	80,858	86,607	69,829	237,294	57·8
Total for 1931	168,052	87,571	23,396	48,559	159,526	52·1

The census represents average daily school attendance during the preceding three months. In the year under review, the dispensers treated 21,270 more villagers and 63,211 more estate labourers than last year.

The table below gives the details of supervision by the different officers. Two dispensers were attached throughout the year to the School Medical Officer, Jaffna.

Table IV.

Number of Schools, Estates, and Villages treated by the Campaign Dispensers under the supervision of Various Officers of the Department during the Year 1932.

Supervising Officers.	Schools.	Estates.	Villages.
District Medical Officers and Assistants	311	245	451
Apothecaries-in-charge of dispensaries	287	33	482
School Medical Officers	441	—	26
Medical Officers of Health of districts	159	—	44
Assistant Inspecting Medical Officer, Kandy	1	54	1
Assistant Inspecting Medical Officer, Bandarawela	—	39	—
Assistant Inspecting Medical Officer, Colombo	—	28	—
Total	1,199	399	1,004

In Table V. is shown the work on estates by the campaign dispensers.

Table V.

Treatments given by Campaign Dispensers on Estates in 1932.

Supervising Officers.	No. of Estates treated.	Census.	Number treated.
District Medical Officers and Assistants	245	63,354	50,480
Apothecaries-in-charge of dispensaries	33	5,328	4,731
Assistant Inspecting Medical Officer, Kandy	54	24,654	18,773
Assistant Inspecting Medical Officer, Bandarawela	39	10,774	9,823
Assistant Inspecting Medical Officer, Colombo	28	3,491	2,800
Total	399	107,601	86,607

(3) *Health Units.*—The number of treatments given by these organizations has increased from 17,689 in 1931 to 26.826 in 1932. It is pleasing to note that this work is to be taken up as a seasonal activity when intensive tactics will be adopted employing their own as well as the campaign staff. Where intensive public health work is done in limited areas, mass treatment of the majority of the inhabitants in that area is bound to have more lasting effects than in other parts where sanitary work is not done so intensively, or not at all.

TABLE VI.

Ankylostomiasis Treatments by Health Units in 1932.

Health Unit.	Number treated.			
	School Children.	Estate Labourers.	Others.	Total.
Matara	2,457	—	2,350	4,807
Kadugannawa	1,350	1,680	1,524	4,554
Trincomalee	2,111	—	1.339	3,450
Dehiwala	2,331	90	893	3,314
Kegalla	1,871	283	1,071	3,225
Panadure	210	—	2,950	3,160
Kalutara	2,329	58	627	3,014
Kurunegala	755	—	547	1,302
Total for 1932	13,414	2,111	11,301	26,826
Total for 1931	10,916	1,216	5,557	17,689

(4) *Mandapam Camp.*—The number of arrivals at the camp has fallen considerably and consequently the number of treatments. A comparison with the 1927 figures is interesting in that it shows the effect of the general depression on estates which employ immigrant labour.

TABLE VII.

Ankylostomiasis Treatments at Mandapam Camp in 1932.

Month.	Number arrived.	Number treated.	Percentage treated.
January	1,704	1,573	92·3
February	2,719	2,573	94·6
March	3,171	3,007	94·8
April	4,760	4,514	94·8
May	6,821	6,546	96·0
June	8,066	7,796	96·7
July	7,357	7,119	96·8
August	4,087	3,954	96·7
September	5,425	5,233	96·4
October	3,118	2,983	95·7
November	2,269	2,160	95·2
December	1,931	1,818	94·2
Total for 1932	51,428	49,276	95·8
Total for 1927	159,431	141,720	88·9

(5) *Estate Medical Staff.*—A strong impetus was given to the work of the estate dispensers by the departmental circular in which it was suggested that dispensers should undergo a course of training in hookworm mass treatment under the local Medical Officers or Assistant Inspecting Medical Officers. These officers were asked to inspect the records kept at estate dispensaries in connection with treatments, test the expenditure of drugs to see if it corresponds to the numbers treated, examine the dispensers and make a report about their competency. They were also asked to supervise when mass treatments were given by estate dispensers. A certificate of competency in mass treatment was issued to estate dispensers on the recommendation of the Supervising Officers and forty estate dispensers obtained this certificate while an equal number who were under training are likely to be granted the certificate early in 1933.

Table VIII.

Ankylostomiasis Treatments reported as given by Estate Dispensers during 1932 by Provinces.

Province.	Number of Estates reported Treatments.	Census.	Treatments.		
			First.	Subsequent.	Total.
Central	399	234,506	94,862	17,743	112,605
Sabaragamuwa	115	67,342	29,297	5,988	35,285
Uva	82	70,494	16,730	3,338	20,068
Western	62	19,637	9,838	1,403	11,241
Southern	26	10,362	4,729	1,396	6,125
North-Western	9	2,515	723	169	892
Total for 1932	693	404,856	156,179	30,037	186,216
Total for 1931	782	416,658	138,420	29,437	167,857

Hookworm Treatment in General.—About one-third of the indigenous population had one round of treatment while more than 45 per cent. of the Indian immigrant population on estates (680,000 persons) received at least one treatment.

Casualties after Treatment.—There have been two deaths, both from chenopodium poisoning, of children brought to Government dispensaries for out-door treatment—one at Lathpandura and the other at Walasmulla. Correct dosages were prescribed in both cases and proper after-treatment was afforded when untoward symptoms developed.

Educational Work.—The same work as reported in the previous year was carried out during the year under review. A radio talk on "Soil Pollution" was given by the Superintendent of the campaign and four lantern lectures were delivered at the Welikada Jail when special research work was carried out there.

Laboratory Work.—Specimens from the field were examined according to the modified technique described in the previous year's report. From September, 1931, to December, 1932, the whole Island was covered by the campaign dispensers and specimens were collected practically from all parts of the Island. The results of examination to ascertain the intensity of infection from September, 1931, to December, 1932, may therefore be considered as indicating a fair estimate of the infection prevailing in 1931 and 1932, the previous general survey having been made in 1924 and 1925.

Separate tables are prepared to show the intensity of infection by provinces in 1931 and 1932.

Table IX.

Microscopical Examinations made during September to December, 1931, on the Basis of Formed Stools, by Provinces.

Province.	Before Treatment.		After Treatment.	
	Number of Persons examined.	Average Egg-count per Gram per Person.	Number of Persons examined.	Average Egg-count per Gram per Person.
Western	2,908	2,500	304	1,000
Eastern	734	2,200	44	900
Northern	422	2,000	—	—
Central	2,634	2,000	201	700
Southern	1,209	1,700	272	700
North-Western	1,101	1,700	262	700
Sabaragamuwa	327	1,400	27	800
Uva ..	136	1,100	—	—
Total	9,471	2,100	1,110	800

Table X.

Microscopical Examinations made during 1932 on the Basis of Formed Stools, by Provinces.

Province.	Before Treatment. Number of Persons examined.	Before Treatment. Average Egg-count per Gram per Person.	After Treatment. Number of Persons examined.	After Treatment. Average Egg-count per Gram per Person.
Eastern	1,075	2,400	178	1,300
Western	10,153	2,300	1,135	1,100
North-Western	1,604	1,900	650	1,000
Central	3,947	1,800	1,325	1,100
North-Central	781	1,800	105	1,100
Sabaragamuwa	1,411	1,700	887	700
Southern	2,534	1,600	675	700
Northern	1,114	1,600	103	800
Uva	1,773	1,100	187	500
Total	24,392	2,000	5,245	1,000

In order to reduce the intensity of soil infection to a greater degree and to tackle the hookworm problem effectively the prevention of soil pollution and mass treatment must go together; the more intensive the former is, the more satisfactory will be the results of treatment.

The opinion may be expressed that after so many years of campaign work, the results as shown by microscopical findings are not very encouraging but before arriving at such a conclusion one must not lose sight of the fact that not more than one-third of the population is given only one treatment in a year. This point should be weighed against the other factor, that four-fifths of the population are, through their insanitary habits, increasing the parasitic load day in and day out.

The following table gives the state of infestation for different age groups in the country.

Table XI.

Intensity of Infection and Incidence Rate by Age Groups in 1932.

		Before Treatment. Number examined.	Before Treatment. Average Egg-count per Gram per Person.	Before Treatment. Percentage infected.
0–4 years	Males	338	700	56·2
	Females	411	600	51·8
	Both sexes	749	700	53·8
5–18 years	Males	12,225	2,000	84·1
	Females	5,826	1,600	82·2
	Both sexes	18,051	1,900	83·5
19–40 years	Males	1,994	2,300	80·7
	Females	2,938	2,600	82·1
	Both sexes	4,932	2,500	81·2
41–60 years	Males	398	1,500	78·6
	Females	201	1,800	89·5
	Both sexes	599	1,600	82·5
Over 60 years	Males	42	3,200	90·5
	Females	19	1,600	57·5
	Both sexes	61	2,600	80·3
All ages	Males	14,997	2,000	82·9
	Females	9,395	1,900	80·9
	Both sexes	24,392	2,000	82·1

In studying the egg-count for different age groups it should be remembered that the infestation with the same number of worms will produce different egg-counts according to the bulk of the faecal load in the intestinal tract, there being more concentration of eggs in the faeces of infants than adults.

Other incidental findings during the course of microscopical examinations are given below:—

TABLE XII.

Percentage of Infection for other Intestinal Parasites in 1932, by Provinces.

Province.	Number of Persons examined.	Percentage infected.			
		Ascaris lumbricoides.	Trichuris trichuria.	Enterobius vermicularis (Oxyuris).	Taenia (sp.)
Western	10,431	86·2	71·3	3·2	·1
Central	4,064	88·7	38·8	2·8	·1
Southern	2,481	76·6	73·5	2·7	·3
Northern	1,184	43·2	52·4	2·9	·2
Eastern	1,005	62·4	68·4	1·3	—
North-Western	1,663	40·0	53·3	1·5	—
North-Central	782	40·3	44·2	2·3	—
Uva	1,764	83·3	74·1	3·5	·3
Sabaragamuwa	1,464	88·2	84·3	2·3	·1
All Ceylon	24,838	78·0	75·8	2·8	·1

The incidence of round worm infestation is less in areas where the rainfall is poor. Mullaittivu and Puttalam having 32 per cent. and Anuradhapura 40.3 per cent. of incidence rate. Other infestations in this table are not of any importance from the public health point of view.

TABLE XIII.

Multiple Parasitic Infection.

	Before Treatment.		After Treatment.	
	Analysis of 24,838 Examinations.		Analysis of 6,018 Examinations.	
	Number.	Percentage infected.	Number.	Percentage infected.
Harbouring no parasite	927	3·7	502	8·3
With one kind of parasite	3,263	13·1	1,276	21·0
With two kinds of parasite	6,577	26·5	2,034	33·8
With three kinds of parasite	13,717	55·2	2,160	35·9
With four kinds of parasite	354	1·4	46	·8
Total infested with some kind of parasite	23,911	96·2	5,516	91·7

Here it may be mentioned that during the work in Welikada Jail in connection with hexylresorcinol, two worms of unidentified species were found passed by a prisoner after treatment with carbon tetrachloride and chenopodium.

Over 90 per cent. of the general population are infested with one kind or other of a parasite, showing that the sanitary habits of the majority are far from clean and unreproachable.

Research Work: (*a*) *Hexylresorcinol.*—During the year under review, the new anthelmintic, hexylresorcinol, was further tested by treatment of 55 school children and 70 prisoners in jail. Complicated cases of ankylostomiasis were treated with this drug by some of the visiting staff of the General Hospital and Lying-in Home, the Lady Havelock Hospital, and the Female Branch Hospital. The consensus of opinion was that the drug is a safe anthelmintic but not so effective as the two standard drugs in general use, oil of chenopodium and carbon tetrachloride. The details of the methods of examination are omitted from this report. The following are the statistics of the result of the work on the drug:—

Table (a).

Hookworms.

No. of Cases.	Sum Total of 48 Egg-counts per C.C. before Treatment.	Sum Total of 48 Egg-counts per C.C. after Treatment.	Percentage of Reduction in Egg-count.	No. of Cases which gave Negative Counts after Treatment.	Remarks.
48 ..	74,200 ..	13,800 ..	81 ..	29 ..	In 60 per cent. complete disinfestation

Table (b).

Roundworms.

No. of Cases.	Sum Total of 55 Egg-counts per C.C. before Treatment.	Sum Total of 55 Egg-counts per C.C. after Treatment.	Percentage of Reduction in Egg-count.	Number of Cases which gave Negative Counts after Treatment.	Remarks.
55 ..	620,900 ..	22,300 ..	96 ..	26 ..	In 47 per cent. complete disinfestation

Summary of the work carried out at Welikada Jail in July and August, 1932, to test the *comparative efficiency of hexylresorcinol and the old drugs, oil of chenopodium and carbon tetrachloride*, as used generally all over the country is as follows:—

For trial treatments of the persons shown in the following table each person in Group " A " was given one gramme of hexylresorcinol, each in Group " B 1 ", 45 minims of chenopodium and carbon tetrachloride in 1 to 3 proportion, and each in Group " B 2 " 45 minims of these two drugs in 1 to 2 proportion. For test treatments 30 minims of chenopodium were given to every person two weeks after the trial treatment. Egg-counts were made in all cases before the work started and again two weeks after the test treatment. All the stools passed during 48 hours from the time of treatment were collected and strained for the purpose of worm counts. The result arrived at is given in the tables below:—

Table (c).

Treatments with Hexylresorcinol (Hookworms).

Group No.	Number of Persons.	Sum Total of Egg-counts before Treatment (Hookworms).	Worms recovered in 48 hours after Trial Treatment.	Worms recovered in 48 hours after Test Treatment.	Total Number of Worms recovered after both Treatments.	Per Cent. of Worms recovered by Trial Treatment.	Sum Total of Egg-counts 2 weeks after Test Treatment.	Number of Negative Cases after Test Treatment.
A ..	56 ..	253,600 ..	2,569 ..	3,097 ..	5,666 ..	45·5 ..	22,200 ..	42

Table (d).

Treatment with Carbon Tetrachloride and Chenopodium combined (Hookworms).

B. 1 ..	8 ..	52,600 ..	1,683 ..	7 ..	1,690 ..	99·5 ..	— ..	8
B. 2 ..	6 ..	30,300 ..	1,119 ..	24 ..	1,143 ..	97·9 ..	— ..	6
Total ..	14	82,900	2,802	31	2,833	98·8	—	14

Table (c).

Other Worms recovered after Treatment.

Groups.	Trial Treatments.			Test Treatments.		
	Round-worms.	Enterobius Vermicularis.	Trichuris Trichuria.	Round-worms.	Enterobius Vermicularis.	Trichuris Trichuria.
A	—	3,388	38	—	2,261	6
B 1 and B 2	—	1,070	129	—	290	4

In addition to the parasites mentioned above, 24 strongyloides and two unidentified worms were recovered during the course of this work.

Conclusions.—(1) Combined use of the drugs chenopodium and carbon tetrachloride when given in the maximum dose of 45 minims is very effective, 98 per cent. of the hookworms harboured by a person being removed in one treatment, while hexylresorcinol in its maximum dose of one gramme was able to destroy not more than 45 per cent. of them.

(2) Hexylresorcinol is a safe drug, no symptoms of serious nature developing in any of the cases treated.

(3) In the preceding tables (*c*) and (*d*) taken together out of a total egg-count of 336,500 before treatment, a count of 22,200 remained in the end, after treatment with 30 minims of oil of chenopodium. In a similar work in 1928 in order to test the comparative efficiency of tetrachlorethylene, it was found after test treatment with oil of chenopodium in 30 minim doses, the egg-counts gave negative results in all the cases treated.

(*b*) *Clinical Studies.*—Regarding the clinical study of complicated cases of ankylostomiasis instituted at the General Hospital and Lying-in Home, the following table gives the details of worm counts made after treatment with varying doses of carbon tetrachloride and chenopodium, combined or separately and with hexylresorcinol.

TABLE XIV.

Worm counts made at General Hospital and Lying-in Home during 1932.

	No. of Treatments.	Hookworms.			Round-worms.	Whip-worms.	Thread-worms.
		Male.	Female.	Total.			
1st treatment	282	12,276	13,644	25,920	179	32	4,849
2nd treatment	110	2,093	2,578	4,671	28	19	197
3rd treatment	44	601	835	1,436	3	8	7
4th treatment	22	81	113	194	1	2	15
5th and subsequent treatments	31	120	124	244	1	7	—
Total	489	15,171	17,294	32,465	212	68	5,068

In one case after administering 40 minims of carbon tetrachloride 1,649 necators were collected from the stools.

At the Lying-in Home it was found that if the haemoglobin percentage in a case of pregnancy complicated with ankylostomiasis falls below 30 per cent. as tested by colour index, it is to be considered as a danger signal.

(*c*) *Worms and high rate of Infantile Mortality.*—As regards the suspicion that worms are a major cause of the high rate of infantile mortality in the Island, in order to find out the intensity of roundworm infestation, specimens of faeces were collected from Lady Havelock Hospital and from the field and examined. The table of results is given on the next page.

Further studies in this line by the examination of specimens from out-stations will be instructive. Health units might lend a helping hand in the collection of specimens for this purpose.

TABLE XV.

Result of Microscopical Examinations made during July, 1932, to December, 1932, of children under 10 years of age.

	Hookworms.			Roundworms.		
Years.	Number of Persons examined.	Average Egg-count per Gram per Person.	Per Cent. infected.	Number of Persons examined.	Average Egg-count per Gram per Person.	Per Cent. infected.
Under 1	116	5	·9	116	200	9·0
1–2	121	100	9·9	121	12,300	52·9
2–3	109	900	52·3	109	13,600	76·1
3–4	149	1,100	62·4	149	16,100	68·1
4–5	248	1,700	81·9	248	14,600	63·3
5–6	264	2,300	81·0	264	18,600	67·8
6–7	407	2,100	82·0	407	17,600	72·2
7–8	803	2,100	83·6	803	17,500	71·6
8–9	675	2,200	83·9	675	16,200	68·1
9–10	932	2,100	83·0	932	14,100	70·0

From the above it is clear that hookworm infestation is very scarce and roundworm infestation very mild in children under one year old. When the ambulatory area of the child is widened with growing age the percentage infested and intensity of infestation increases, more so in the case of roundworms than hookworms. In the school-going population the intensity of hookworm infestation is practically the same as in the general population. The roundworm parasites are cast off with the advance of years. In 70 adult prisoners examined in connection with the research into hexylresorcinol, no roundworms were collected after treatment. Under the age of one year roundworms may be a very minor cause of death. Any anthelmintic treatment that is required for this group may be left to the discretion of the attending doctor. In case of children between one and two years, the infestation with both parasites is very mild, 12,300 eggs counted in roundworm infestation representing only 12 worms. For this group also the diagnosis and anthelmintic treatment should be left in the hands of the doctor consulted for advice. For children over two years mass treatment in general is indicated. It should be remembered that when symptoms of chenopodium poisoning occur they supervene rapidly, particularly, in children, and are followed by prostration and death in two or three hours after administration of the drug.

Expenditure.—

TABLE XVI.

Expenditure for 1930, 1931, and 1932.

	Before Retrenchment. 1930.	After Retrenchment. 1931.	1932.
	Rs. c.	Rs. c.	Rs. c.
Salary and allowance, Superintendent	14,550 0	14,550 0	14,550 0
Inspection : Superintendent's travelling	1,797 85	3,015 82	962 60
Salary and rent allowance of 8 Medical Officers and 8 Caretakers	45,272 61	—	—
Commuted travelling allowance Medical Officers	22,458 5	—	—
Transport allowance, Medical Officers	2,000 69	—	—
Salary of clerks, microscopists, dispensers, peon, attendants, and latrine cooly	36,771 25	36,843 25	38,163 25
Commuted travelling allowance of dispensers, caretakers, and office peon	19,115 45	2,946 25	2,675 12
Cooly allowance of dispensers	2,880 0	2,880 0	1,614 0
Travelling for supervision of dispensers by Departmental Officers	—	514 86	293 69
Travelling and transport of dispensers	1,694 73	1,815 63	2,474 7
Transport of campaign goods in change of camp	2,974 63	32 32	27 45
Incidental expenses : Contingencies, &c.	1,389 60	113 81	98 26
Total	150,904 86	62,711 94	60,858 14

	1931. lb.	1932. lb.
Expenditure of Drugs :—		
Carbon tetrachloride	1,290	2,121
Chenopodium	788	1,094

The re-organization of the campaign at the end of the year 1930 has resulted in a saving of Rs. 90,000 in the year under review as compared with the year 1930 and a reduction of Rs. 1,800 as compared with 1931, the first year after retrenchment.

2.—GENERAL MEASURES OF SANITATION.

Conservancy.—(1) *Public Latrines:* During the financial year 1931-32, 20 public latrines were built by the Sanitary Board and Village Committees throughout the Island as tabulated below :—

Province.	Number of Latrines.
Western	1
Central	2
Southern	5
Northern	9
Eastern	—
Sabaragamuwa	1
North-Western	—
Uva	2
	20

Government allowed a grant of Rs. 10,000 to the Government Agents towards the cost of these latrines for the financial year 1931-32.

(2) *Private Latrines:* The following is a statement of work done in this connection throughout the Island :—

(*a*) Number of notices served during the year—		
(1) To construct latrines		14,975
(2) To repair latrines		3,206
(3) To convert pits into dry-earth latrines		128
	Pit Latrines.	Dry-earth Latrines.
(*b*) Number of latrines—		
(1) Completed	10,038	565
(2) Repaired	3,109	222
(3) Pit latrines converted into dry-earth latrines	—	105
(*c*) Number of persons who failed to comply with the requirements of the notices		6,930
(*d*) Number of prosecutions entered		1,438
(*e*) Number of convictions obtained		1,053

The figures tabulated below show the work done on latrines in the various provinces during the year 1932 :—

Province.	Latrines completed.		Latrines repaired.		Pit Latrines converted into Dry-earth Latrines.
	Pits.	Dry-earth.	Pits.	Dry-earth.	
Western	4,674	89	1,884	72	53
Central	1,766	72	549	51	14
Southern	1,062	52	519	10	14
Northern	213	146	2	21	1
North-Western	622	91	122	48	8
Uva	492	44	—	—	—
Sabaragamuwa	1,209	65	33	20	15
North-Central	—	6	—	—	—
	10,038	565	3,109	222	105

In Sanitary Board towns almost all the latrines are of the dry-earth type. In most areas the latrines are of the pit system but in some of the rural bazaars pit latrines have been converted into dry-earth latrines and conservancy is being done by Village Committees or on a co-operative basis.

Bored-hole latrines are a recent innovation. 22 such latrines were installed in certain rural areas. Whenever they had been constructed, people seemed to like them.

The progress made in latrine construction during the year has been satisfactory when one considers the existing severe depression.

The majority of the latrines in the rural areas are of a more substantial and permanent nature than before and in some cases the platforms are of concrete, thus gradually eliminating the insanitary wooden platforms which in themselves were a source of danger both directly and indirectly.

Prosecutions are as a rule only entered after considerable time and every circumstance taken into consideration. In many instances twenty-four months elapsed after the serving of notices before a prosecution was entered.

Disposal of Night Soil.—In the Urban District Council areas and in the Sanitary Board towns especially in the Western Province where the dry-earth system is in use, the question of the disposal of night soil appears to be a matter of great importance in that suitable areas have to be secured away from the towns and proper access provided. The trenching grounds are regularly inspected and maintained in good order.

The collection and disposal of night soil by contract as is done in some of the areas controlled by local authority is far from satisfactory.

Scavenging and Disposal of Refuse.—In Sanitary Board towns the refuse from residential and trade premises which is generally left in dust bins or in heaps by the road side is collected and removed in scavenging carts to be ultimately disposed of by one of the following methods:—

(*a*) dumping, (*b*) burial in trenches, (*c*) incineration. Dumping in hollows and swamps serves a useful purpose but needs constant supervision. By this process we are gradually getting rid of potential mosquito breeding places, but unless the work is properly supervised and the rubbish evenly spread and covered with earth, it can become a serious menace.

Incineration is about the best method and is gradually taking the place of other and less satisfactory methods of disposal of refuse.

The work of the Sanitary Engineering Division in connection with sewage disposal and drainage is given in detail in the section dealing with Sanitary Engineering.

Water Supplies.—The question of a pure water supply is a very important one to numerous towns and villages throughout the country and much work has already been put in in the investigation of existing and proposed supplies. No town in Ceylon except Colombo has an adequate and pure water supply. The majority of towns in the low-country obtain their water supply both from public and private wells. A good number, however, are shallow unprotected wells.

The work of the division in connection with water supplies of towns and hospitals is described in the section dealing with Sanitary Engineering.

Public Wells.—126 public wells were built during the year as shown below:—

Province.	No. built.
Western	2
Central	99
Southern	6
Northern	11
Eastern	2
Sabaragamuwa	4
North-Central	2
	126

Private Wells.—

(*a*) Number of inspections made	117,423
(*b*) Number of wells found unprotected	64,578
(*c*) Number of notices served for improvement	236
(*d*) Number of wells improved	1,597
(*e*) Number of persons prosecuted	13
(*f*) Number of persons convicted	9

Examination of Water Supplies.—

Number of samples sent for—

(1) Bacteriological examination	40
(2) Chemical examination	25

Number of samples found unfit for drinking purposes—

(1) Bacteriologically	—
(2) Chemically	12

Whenever unsuitable supplies of water were detected the sources of such supply have been improved.

Safeguarding of water supplies in rural areas still continues to be a difficult problem for lack of proper legislation. Tactful persuasion and education have been responsible for whatever has been done in this direction.

Licensed Trades.—The following is a statement of the applications for licensed trades dealt with:—

	Number of Applications.		
	Received.	Recommended.	Not recommended.
(1) *Food and Drink Handling Trades*—			
(1) Bakeries	539	484	55
(2) Tea and coffee boutiques	1,389	1,341	48
(3) Eating-houses	442	416	26
(4) Dairies	273	242	31
(5) Butchers' stalls	217	212	5
(6) Fish stalls	97	94	3
(7) Pork stalls	11	10	1
(8) Aerated water manufactories	8	7	1
(2) *Licensed Trade Premises*—			
(1) Public galas	48	42	6
(2) Manure stores	15	14	1
(3) Soap manufactories	7	7	—
(4) Hide stores	7	6	1
(5) Lime kilns	20	17	3
(6) Brick kilns	16	14	2
(7) Laundries	96	68	28
(8) Plumbago sheds	1	1	—
(9) Metal quarries	2	2	—
(10) Public bathing places	5	5	—
(11) Pits for soaking coconut husks	12	12	—
(12) Fibre mills	4	4	—
(13) Desiccating mills	5	5	—
(14) Tanneries	7	7	—
(15) Salt fish stalls	20	20	—

Maintenance of Sanitary Condition of Licensed Trade Premises.—

(*a*) Number of premises inspected	6,990
(*b*) Number of notices served for breach of rules	964
(*c*) Number of notices voluntarily complied with	958
(*d*) Number of persons prosecuted	263
(*e*) Number convicted	177
(*f*) Number warned and discharged	69

Sanitary Inspections.—The following is a statement of inspections done:—

(a) Private Premises.

Number of inspections made during the year	788,542
Number of premises found insanitary	180,081
Number of mosquito breeding places detected	75,985
Number of notices served to abate nuisances	8,633
Number of nuisances abated without prosecution	25,305
Number of persons prosecuted	718
Number of persons convicted	503
Number warned and discharged	158

(b) Railway Premises.

	Inspected.	Defective.	Defects remedied.
(1) Of Stations—			
Premises	1,358	64	51
Drains	919	35	25
Latrines	1,174	39	17
Mosquito breeding places	21	12	2
Water supplies	217	2	2
Scavenging	266	20	17
Conservancy	287	11	5
(2) Of Bungalows—			
Premises	3,844	158	102
Drains	3,582	152	115
Latrines	3,404	121	71
Mosquito breeding places	39	14	3
Water supplies	1,615	30	13
Scavenging	1,706	53	40
Conservancy	1,800	11	8
(3) Of lines—			
Premises	2,751	350	143
Drains	2,561	231	144
Latrines	1,309	169	60
Mosquito breeding places	81	20	11
Water supplies	379	65	6
Scavenging	981	99	69
Conservancy	745	101	34

All trades, bakeries, tea and coffee boutiques, meat stalls, slaughter-houses, dairies, &c., have to be licensed. These licences are renewed yearly. The renewal of licences is done only after the recommendations of the Medical Officer of Health have been received by the Chairman.

The Sanitary Inspectors in the area visit the trades premises regularly and see that they are maintained in a clean and sanitary state. A separate trade register is kept by each Inspector and the findings on their inspection are entered regularly. All the trades in the area are visited at least twice a month—in the Sanitary Board towns more often.

The inspection of private premises constitutes one of the routine duties of the Sanitary Inspector. In the course of his inspection, he endeavours, as much as possible, to get insanitary premises cleaned up in his presence, collections of rubbish burnt or buried and other matters are attended to on the spot wherever practicable. Though it entails more time, this method has always proved very satisfactory and this system is being encouraged. In addition to these he gives talks on sanitation and personal hygiene to groups of villagers while on inspection. The following statement gives particulars of offences against sanitary regulations which have not already been mentioned:—

Offences.	Prosecuted.	Convicted.
Erection of unauthorized buildings	109	90
Failing to demolish temporary sheds	9	5
Occupying buildings after compulsory closures	20	18
Occupying buildings without certificate of conformity	46	37
Failing to improve insanitary houses	57	21
Deviating from approved plan	32	26
Failing to provide drains	3	3

Offences.	Prosecuted.	Convicted.
Faecal pollution	131	113
Carrying on unlicensed trades	483	443
Exposing for sale food unfit for human consumption	85	80
Depositing rubbish in drains	86	57
Throwing rubbish on public roads	21	19
Sinking wells without the permission of the Chairman, Sanitary Board	4	—
Failing to clear rank vegetation	19	18
Failing to notify cases of infectious diseases	73	57
Failing to provide dust bins	13	13
Alterations to buildings without permit	23	20
Failing to fill in insanitary pits	17	12
Exposing for sale food on roadside	80	64

3.—SCHOOL HYGIENE.

The school medical service was carried on in 1932 by five whole-time School Medical Officers, five school nurses supplemented by the part-time services of Medical Officers of Health and a few Medical Officers who examined a small number of schools within their district areas. 599 schools were visited and 64,454 children inspected. The total school population in Ceylon is estimated at 600,000 and the number inspected last year represents a little over 10 per cent.

There is a great disparity in the number of schools and pupils examined by the different School Medical Officers. In the Western Province 83 urban schools were visited and 12,959 children inspected by two School Medical Officers while in the Southern Province 145 schools and 20,967 children were inspected and in the Northern Province 265 schools, with 17,648 were examined by single School Medical Officers. These higher figures are too large for any satisfactory work to be done and the work consists mainly of a cursory examination for physical defects with little curative or follow up work.

To ensure good and unhurried work being carried out each School Medical Officer should not do more than 100 schools and a maximum of 8 or 9,000 school children per year.

The following comparative table shows the work done for the year:—

	Western Province, Colombo.	Southern Province, Galle.	Central and Uva Provinces, Kandy.	Northern Province, North-Central Province, Eastern Province, Jaffna.	Total.
Number of schools visited	83	145	106	265	599
Number of pupils examined	12,959	20,967	12,880	17,648	64,454
Defects Noted.					
(*a*) Dental caries	2,265	1,525	1,869	2,378	8,037
(*b*) Visual defects	1,126	227	109	274	1,736
(*c*) Enlarged tonsils (*d*) Adenoids	534	390	674	1,062	2,660
(*e*) Ankylostomiasis	850	2,325	3,044	2,986	9,205
(*f*) Malaria	30	68	227	1,290	1,615
(*g*) Skin diseases	208	503	205	515	1,431
(*h*) Aural defects	73	13	16	102	204
(*i*) Parangi	—	5	—	—	5
(*j*) Unvaccinated	425	679	516	676	2,296
(*k*) Other defects	1,501	1,523	1,321	2,096	6,441
					33,630

Ankylostomiasis (9,205) and dental caries (8,037) comprise over half the defectives noted. Ankylostomiasis is being dealt with as the measures detailed on page 28 for mass treatment shows; but dental caries receives hardly any attention in the provinces except in Colombo where the Dental Institute and numerous private dentists provide comparatively adequate facilities for dental treatment.

A fully qualified Dental Surgeon has been instructed to make a special report on dental defects and to formulate a practicable scheme of dental aid for schools. The provision of adequate facilities for dental treatment of growing children in the schools is the most urgent advance in public health which the State should undertake in conjunction with Municipalities and other local bodies for the welfare of the future generation of citizens.

In Colombo a few of the larger secondary schools have embarked on a dental scheme to be supported by contributions by pupils and the results will be watched with interest.

Enlarged tonsils and adenoids (2,660) are very common defects which are receiving more attention within the last 2 or 3 years. There is a special Nose, Throat, and Ear Clinic at the General Hospital, Colombo, started since the latter part of 1932 and more operative treatment is also carried out for these defects in the provincial hospitals. The highest incidence is in the Northern Province where 6 per cent. of the school children were found to be affected.

Malaria.—The Northern Inspectorate reported the largest number of cases of malaria, viz., 1,290 cases out of a total of 1,615. The most affected areas are in the Pallai District and other rural areas in the Northern Province and in the jungle areas of the North-Central Province and Eastern Province. In the Western (30) and Southern (68) Provinces there was hardly any malaria reported this year, owing to the absence of the outbreaks noted in 1931. A certain amount of malaria is still reported from the Central Province (227 cases) mainly in the Dumbara and Matale Districts and Wellassa and Bintenna in Uva. The figures given do not in any way indicate the seasonal incidence of malaria among school children of which no statistics are available. These figures are merely those of cases noted by the School Medical Officer on his visits. Systematic efforts are made in the schools to administer prophylactic treatment by the free issue of quinine in tablet form, powders or mixture. During seasonal outbreaks of fever special officers are employed for quinine distribution.

Malnutrition.—3,460 cases were reported, the largest number being from the Northern Inspectorate. In the Western Province 659 cases were reported. The Colombo Municipality has responded to the pleading of the School Medical Officers for provision of a free meal to poor children and 800 children were fed in 1932; larger provision is promised in 1933. There is need for similar provision in the Vanni districts of the Northern Province and North-Central Province and in the backward portions of the poorest areas in the Island.

Visual Defects.—1,736 cases were reported the largest number being in the Western Province (1,126) in which the greatest facilities exist for examination and treatment at the Victoria Memorial Eye Hospital where special weekly clinics are held. At these clinics 936 eye cases were treated: Kandy, Galle, Jaffna, Batticaloa, and Badulla are also provided with properly equipped eye clinics from which the school children can obtain specialist examination and treatment.

Skin Diseases.—Scabies and ringworm are the commonest skin affections prevalent. These are cases which could easily be treated by the School Medical Officers and school nurses on their visits, bad cases being referred to local treatment centres. An increase of cases is reported 1,431 as against 1,287 in 1931. The greatest increases were in the Northern and Southern Provinces.

Aural Defects.—Only 204 cases were reported. This small number is probably due to lack of training on the part of the School Medical Officers in the examination of such cases. It is expected that with the concentration of the work of the School Medical Officers and the other part-time officers doing this work a larger number of aural defects will be noted and brought up for treatment.

Unvaccinated Children.—2,296 were found in 1932 as compared with 3,286 in 1931. A large number of children were vaccinated in 1932 especially towards the end of the year helped by the scare induced by the smallpox outbreaks in

Colombo and Jaffna. The Education authorities should insist more stringently that no child be admitted to schools who do not bear marks of successful vaccination.

Special Clinics in Colombo.—The clinics at the Eye Hospital, Dental Institute, Anti-Tuberculosis Institute, Nose, Ear, and Throat Department at the General Hospital and at the Municipal clinics have been continued.

Dental Institute Clinic.—2,359 children (with 3,246 attendances) were treated at this clinic. The work included 1,900 extractions, 981 cleanings, 100 alveolar abscesses, and 265 fillings.

Victoria Memorial Eye Hospital Clinic.—936 cases treated. There were also 503 cases of ear, nose, and throat cases. This work has been transferred to the Special Clinic, General Hospital, since May, 1932.

Anti-Tuberculosis Institute Clinic.—888 children were treated with 960 subsequent attendances.

Mutwal Municipal Dispensary Clinic.—377 children attended and 353 subsequent visits were paid. In the work in Colombo a considerable amount of follow-up work is done by the school nurses. School Nurse Anderson recorded 371 visits to schools and 197 to clinics with a maximum of 17 visits paid to one College (St. Peter's) and 8 to 10 in many other cases.

The home visits are not many, only 7 being paid by the two school nurses. School Nurse Mutuwady records 369 visits to schools with a maximum of 37 paid to one College (St. Benedict's) and 196 attendances at clinics.

A large number of defects are noted but no notes are kept of the defects corrected. The same omission is noted with regard to the reports from the other School Medical Officers.

The School Medical Officer, Northern Province, reports having given mass treatment for hookworm through acting dispensers to 15,111 children in 317 schools. This is very useful work which all School Medical Officers should undertake in addition to treatment of skin diseases like scabies, ringworm, pediculosis, &c. The school nurse is particularly useful for this purpose.

School Health work done by Medical Officers of Health.—Eleven Medical Officers of Health Units undertook school health work and examined 82 schools with a total of 7,640 on their rolls. Of these, 5,776 children were examined and 4,154 defectives were found which gives the high percentage of 71 per cent. the maximum being 91 per cent. 7,669 defects were noted and 1,386 or 18 per cent. corrected. The largest number of schools examined by Medical Officer of Health were in the Kalutara Health Unit 26, Kegalla Health Unit 23, the other Medical Officers of Health having visited 2 to 9 schools. This extension of work to include the Medical Officers of Health should be of the greatest value since better results can be achieved by many officers making an unhurried and careful examination of a few schools within their own area and bring up the cases to the care of the curative side than in one School Medical Officer attempting to inspect over 200 schools in a year and 17 to 20,000 pupils.

We look forward to an increasing number of schools being brought into orbit of the Medical Officers of Health work in the coming years. This extension of work to include the Medical Officers of Health is on the lines of a suggestion made a few years ago to allocate about 12 schools to each Medical Officer in charge of a hospital or dispensary so that this officer could visit one school per month and make a careful examination of the children and ensure the defectives getting adequate treatment at each hospital or dispensary.

At 92 outstation hospitals and 14 dispensaries in charge of Medical Officers 1,272 schools per year could be easily visited by these officers-in-charge and at least 254,400 children seen. This would be a considerable addition to the 33,630 children seen by the School Medical Officers in 1932 and the 5,776 seen by the Medical Officers of Health.

The experience gained by the last 14 years of school medical work in Ceylon shows that the time has come to give the work a more definite and practical direction and to bring it under the supervision by the Provincial Surgeon who should be in touch with the work. A gool deal has been achieved in the survey of physical defects in Ceylon school children and a " health conscience " has been awakened in teachers and parents by their attention being frequently drawn by these inspections to the health problems in their schools. More practical results are now desired in obtaining the correction of defects found in the systematized inculcation of health habits in the daily discipline of the school child.

The special investigations which are now being carried on, the development of health instruction which is given to teachers and school children by the training classes organized under the auspices of the Health Education Section of the Sanitary Department and the co-operation of the Health Units and Medical Officers of Health in this work are tending to the evolution of a system in which all units of the Medical and Sanitary Services could co-operate in furthering the work of school hygiene.

4.—LABOUR CONDITIONS.

As in previous years this report is mainly concerned with conditions of immigrant labour on the estates coming under the Medical Wants Ordinance.

During the year 1932 financial conditions of the main industries deteriorated rather than improved and it became increasingly difficult for estate proprietors to effect the improvements in housing and sanitary conditions required under the Medical Wants Ordinance, Nos. 9 and 10 of 1912, or indeed in some cases to maintain the standard already reached.

Medical Wants on Estates in 1932.

There was no change in the number of Government hospitals scheduled to estates, viz., 66. 107 Government dispensaries remained scheduled as against 108 in 1931. Eighty-seven estate hospitals were also maintained, being the same number as in 1931. The great majority were satisfactorily equipped and maintained. Maintenance of such hospitals is aided by the refund of a proportion of the cess collected on export of tea, cacao, or rubber produced by the estate. 720 dispensaries are also maintained by estates, and are assisted by grant of drugs to the value of 50 cents per head of the respective labour forces employed. Rebates allowed on account of hospitals amounted to Rs. 191,400 during the financial year 1931-32 and the value of drugs issued during the same period amounted to Rs. 247,594.90. Considerable improvement in the type of dispensary building could be effected especially in the Western Inspectorate but cannot be expected while most estates are barely able to pay their way and many even making a loss. For the same reason it is not at present to be expected that estates generally should employ qualified apothecaries but it is to be hoped that as financial conditions improved such officers whose services are now available will be more generally employed.

Inspecting Officers.—There was no change in the system of inspection, but the strength of the inspectorate was reduced from six to five officers by the suppression, on grounds of economy, of the post of Assistant Inspecting Medical Officer, Western Inspectorate. This was practicable as the area in question consisting mainly of rubber and low-country tea estates was more seriously affected by the depression in prices than the other two areas, and the number of labourers employed fell considerably in consequence. In all 755 estates were visited.

Estate Sanitation: General.—The Inspecting Medical Officers again report that in spite of the depression the sanitary conditions of the estates visited were satisfactory.

Of the 259 estates inspected in the Central Province Inspectorate the general sanitary condition of 7 was reported to be bad; in the Province of Uva Inspectorate the sanitary condition of 3 out of 182 estates inspected was bad; in the Colombo Inspectorate the sanitary condition of 16 out of the 314 inspected was bad.

Line Maintenance.—In the Western and Uva Inspectorates particularly a small number of lines remained unoccupied and it is regettable that many of these carefully constructed lines now show signs of deterioration owing to their remaining unoccupied, being exposed to damage from cattle, white ants, &c. As against this fact, a number of insanitary old lines will probably so deteriorate as to render their complete rebuilding inevitable whenever a measure of prosperity returns.

Line Surroundings.—There were some improvement in the sanitary conditions of line surroundings except in the Uva Inspectorate, where the Inspecting Medical Officer noted a deterioration due to employment of fewer scavengers and to the close proximity of vegetable gardens to the lines, leading to soil pollution.

Line Construction.—As might be anticipated little or no new construction was undertaken in the course of the year. There is less enthusiasm for back-to-back lines, and in the Central Province Inspectorate the percentage of standard lines is now over 90 per cent. Some of the possible improvements noted by the Inspecting Medical Officers are separate kitchens, proper lofts to prevent the inmates putting up impromptu structures which obstruct proper ventilation, and adjustable protection against bad weather for the verandahs.

Of the rooms inspected in the Colombo Inspectorate, 17,002 out of 19,765 were up to Government requirements; in the Central Province Inspectorate 30,074 out of 32,439 were up to Government requirements; in the Province of Uva Inspectorate 15,267 out of 29,233 were up to Government requirements.

Line Accommodation.—There was very little overcrowding owing to the reduction in labour forces.

The following are the figures for the past four years:—

Inspectorate.	Not overcrowded.				Slightly overcrowded.				Overcrowded.			
	1929.	1930.	1931.	1932.	1929.	1930.	1931.	1932.	1929.	1930.	1931.	1932.
Colombo	262	326	389	312	11	12	3	1	4	—	—	—
Central	256	170	245	166	—	5	3	1	7	13	11	2
Uva	168	183	151	161	21	10	5	11	1	11	8	10
	686	679	785	639	32	27	11	13	12	24	19	12

Latrines.—The great majority of estates have now adequate latrine accommodation but there are still a few which have none at all, while there are still a number of latrines of unsatisfactory type, *e.g.*, too dark, or with wooden instead of concrete platforms which cannot be easily cleaned, and which, apart from being insanitary, are naturally unpopular with the labourers. It was particularly remarked that the bucket type of latrine is much more popular with the labourers and that the use of latrines is steadily increasing. More attention is needed to the question of provision of wide-mouthed receptacles for the use of children, not only because the latter are more prone to pollute the surroundings of lines but also because it is far easier to inculcate sanitary habits in children than in adults.

The following table shows the progress made in latrine construction in the past four years on the estates inspected:—

Inspectorate.	Provided a Sufficient Number of Latrines.				Provided an Insufficient Number of Latrines.				Provided no Latrines.			
	1929.	1930.	1931.	1932.	1929.	1930.	1931.	1932.	1929.	1930.	1931.	1932.
Colombo	238	270	305	293	36	26	54	11	3	8	5	10
Central	160	59	48	89	97	122	107	74	6	12	8	6
Uva	83	143	124	146	92	43	21	30	15	18	19	6
	481	472	477	528	225	191	182	115	24	38	32	22

Water Supply.—There was some improvement in the water supply during the year, but this very essential facility also suffered from the depression. A fair percentage of estates still have incompletely protected supplies, and there is considerable room for improvement.

In 1931, 441 of the estates visited had an entirely protected supply; in 1932, 463 of the estates visited had protected supplies. The number of unprotected supplies formed about 15 per cent. of the total number of supplies inspected, and were usually on estates owned by private individuals.

Maternity and Child Welfare.—The infantile mortality rate dropped from 213 in 1929 to 194 in 1930 and to 184 in 1931 and rose to 188 in 1932. The infantile mortality rate for the whole Island dropped from 187 in 1929 to 175 in 1930 and to 158 in 1931 and rose to 162 in 1932.

In 1932, 2,498 male infants, and 2,078 female infants died on estates, a total of 4,576, as against a total of 4,303 in 1931. The infant death rates of the different estate districts for 1928, 1929, 1930, 1931, and 1932 are given below:—

	1928.	1929.	1930.	1931.	1932.
Kandy	219	229	200	212	223
Matale	230	235	234	175	175
Nuwara Eliya	220	240	223	219	233
Badulla	228	231	185	163	165
Ratnapura	185	184	164	138	126
Kegalla	172	147	136	127	128
Colombo	205	134	138	124	135
Kalutara	140	144	159	126	81
Galle	172	169	215	164	163
Matara	152	231	213	234	228
Kurunegala	363	215	247	106	164

The chief causes of death during the past four years are as follows:—

Causes.	Infant Deaths under One Year.				Percentage of Deaths to Total Infant Deaths on Estates.				Corresponding Percentage for the Island.			
	1929.	1930.	1931.	1932.	1929.	1930.	1931.	1932.	1929.	1930.	1931.	1932.
Convulsions	1,008	778	700	723	18·9	16·2	16·3	15·8	29·2	25·7	26·1	23·1
Tetanus	6	2	1	2	·1	·04	·001	·05	·1	·1	0·1	0·1
Diarrhoea	60	58	53	51	1·1	1·2	1·2	1·1	1·6	1·4	1·0	1·0
Bronchitis	123	107	87	118	2·3	2·3	2·0	2·6	·8	·7	0·9	1·1
Pneumonia	239	185	195	236	4·5	3·8	4·5	5·1	2·3	2·1	2·4	2·5
Enteritis	8	15	8	7	·1	·36	0·2	·15	·9	0·9	0·9	0·9
Debility	2,817	2,661	2,398	2,558	52·8	55·4	55·8	55·9	20·9	21·0	21·9	21·7
Prematurity	783	707	628	642	14·7	14·6	14·6	14·0	6·3	6·5	6·7	6·6
Other Causes	294	291	233	239	5·5	6·0	5·4	5·3	37·9	41·6	40·0	43·0

Debility and convulsions are once more the chief causes of death. The rate of mortality is attributed to inadequate skilled attendance ante-natal, at the confinement and after the birth. Comparatively few estates retain the services of trained midwives, this being to some extent due to the difficulty in securing the services of suitable women, most of the certificated midwives being Colombo women who are unsuited and unwilling to accommodate themselves to estate life. The ideas and methods of the labourers themselves on the subject of maternity and child welfare are not calculated to increase the infants' chances of life, and the remedy appears to be in the training of suitable estate women as midwives as soon as estate funds permit of this being done.

As regards maternal welfare, the maternal mortality rate, which was 23.0 in 1930 as compared with 20.1 in 1929 and 19.5 in 1928, has dropped to 20.4 in 1931 and to 17.2 in 1932. This high rate is probably largely due to the stubborn conservatism of the Indian labourers which prevents their utilizing freely the medical benefits now provided on estates for lying-in women. The maternity wards on estates are not used freely and it is only by the gradual education of the female labourers and their personal experience of the advantages to be derived by treatment in maternity wards on estates that any considerable improvement can be expected.

Most estates now allow expectant mothers a rest during the last month of pregnancy and give other benefits in the form of food and cash, though the cash bonus has in many cases been perforce reduced recently.

Principal Causes of Deaths among Estates Labourers.—Figures showing the principal causes of deaths among Indian immigrant labourers are given in Section II., Vital Statistics. The chief causes of death were debility, pneumonia, ankylostomiasis, infantile convulsions, and diarrhoea.

Epidemic Diseases.—There were no special outbreaks of epidemics in 1932 on estates.

Estate Mortality Statistics.—The following mortality statistics for estates are of interest:—

	1928.	1929.	1930.	1931.	1932.
General mortality rate	27·6	25	22·1	20·8	18·7
Infantile mortality rate	211	213	194	184	188
Maternal mortality rate	19·5	20·1	23	20·4	17·2
Deaths from penumonia	2,816	2,589	2,077	1,949	1,422
Deaths from dysentery	1,723	1,384	1,028	706	445
Deaths from diarrhoea	1,597	1,349	1,080	846	663

These figures show that the improvements carried out in housing, food supply, water supply, and general sanitation have been of real benefit to the Indian labourers as evidenced by a rapidly decreasing death rate during the last five years.

In spite of the difficult times estates are experiencing, every effort should be made by them to maintain the progress made in respect of estate sanitation and the health of estate labourers.

5.—HOUSING AND TOWN PLANNING.

Before any building can be constructed or alterations effected to existing buildings in the Sanitary Board areas and within the Urban District Council, application has to be made to the local authority who refers them to the Medical Officer of Health. As a general rule permission is allowed provided the building or alteration conforms to the Housing Ordinance.

The following is a statement of work done under the Ordinance referred to:—

(1) *New and Reconstructed Buildings.*

Number of applications received in respect of—	New.	Reconstruction and Repairs.
(*a*) Dwelling houses	874	529
(*b*) Other buildings	480	134

(2) *Insanitary Buildings.*

(*a*) Number of insanitary buildings reported upon during the year	235
(*b*) Number of closing orders obtained	69
(*c*) Number of buildings improved	85
(*d*) Number of demolition orders obtained and extended	25
(*e*) Number of buildings voluntarily demolished	54

6.—FOOD IN RELATION TO HEALTH AND DISEASE.

The inspection of all food exposed for sale and the control of food handling establishments is in the hands of the local authority which may be a Sanitary Board, Local Board, or an Urban District Council. All such trades have to be licensed. These licences are renewed yearly.

The renewal of licence is usually done after the recommendations of the Medical Officers of Health have been received by the Chairman.

Milk Supply.—In the absence of a Pure Food Act, the present unsatisfactory control of sale of milk will continue.

There is no control of sale of milk in rural areas owing to lack of suitable legislation.

The following is a statement of work done in connection with milk control:—

(a) Number of samples taken and sent for analysis	250
(b) Number of samples found adulterated	182
(c) Percentage of water varied from	6 per cent. to 65 per cent.
(d) Average adulteration	24.9
(e) Number of persons prosecuted	182
(f) Number convicted	163
(9) Number warned and discharged	25
(10) Amount of fines realized	Rs. 1,556

Meat Inspection.—All cattle slaughtered were inspected before slaughter which took place in slaughter-houses provided by the local authorities. All meat stalls have to be licensed.

For sale of meat, fish, vegetables, and fruits, markets are generally provided in areas under local bodies. They have been supervised and maintained satisfactorily by the Inspectors in charge of the areas concerned.

All foodstuffs exposed for sale were regularly inspected and prompt action was taken, where necessary. under the provisions of the general law dealing with food unfit for human consumption.

The storage of rice is controlled by specific regulations in certain towns as a precautionary measure against plague.

7.—HEALTH UNITS.

During 1932 no new units were established, but a commencement was made in enlarging the areas of three of the units, viz., those of Matara Gravets and Wellaboda pattu, Weudawili hatpattu, and Paranakuru korale. The work in these new areas consisted in carrying out health surveys.

Area.—At the end of 1931, 850 square miles (incorrectly stated as 876 in 1931 report) has been taken up for work. During 1932, 41 square miles were added to the Weudawili Hatpattu Unit, 22 square miles to the Matara Gravets and Wellaboda Pattu Unit, and 56¾ square miles to the Paranakuru Korale Unit; making in all 969 square miles at the end of the year in which health unit work was being carried out.

Population.—The population cared for by the Health Units has increased from 446,887 or 8.4 per cent. of the Island population to 522,750 or 9.8 per cent. in 1932. The population added by the extension of units was 16,257 in Weudawili hatpattu, 14,000 in Matara Gravets and Wellaboda pattu, and 37,078 in Paranakuru Korale Unit. Of the total population, 87,984 or 16.8 per cent. is urban and 434,766 or 83.2 per cent. is rural.

Personnel.—The personnel employed is as follows:—

	1931.	Added.	1932.
Medical Officers of Health	8	—	8
Medical Officer	1	—	1
Supervising Sanitary Inspector	1	—	1
Sanitary Inspectors	51	4	55
Public Health Nurses	12	4	16
Midwives	48	—	48
Clerks	9	—	9
Peons	8	—	8
Orderlies and labourers	11	—	11

In addition to the above, two Entomological Assistants and two Field Attendants were temporarily detailed for anopheline survey work in two units, viz., Weudawili hatpattu and Paranakuru korale. A hookworm dispenser was attached to each of the units for varying periods during the year.

During December the Medical Officers of Health, Trincomalee and Weudawili hatpattu along with another Medical Officer of Health, were given an intensive course in malaria work at Colombo for one week.

The nurses who were in training completed their course and were posted to the various units thus providing every unit with at least one Public Health Nurse.

During the year a new training class for five Public Health Nurses was commenced at Kalutara and the written examination was held in December.

The work of midwives requires very close supervision, as a result of which the services of four midwives had to be discontinued during the year.

As a measure of retrenchment, the anti-malaria work in Kurunegala town was placed under the supervision of the Medical Officer of Health of the Health Unit. This enabled the Anti-Malaria Office to be brought under the same roof as the Health Unit and District Health Offices which were shifted to Colombo road.

The anti-malaria work at Trincomalee was also placed under the supervision of the Health Unit Medical Officer of Health.

Work.—The type of work carried out has continued to be as originally planned. During the second half of the year, the usual routine work in the Weudawili Hatpattu Unit was interfered with by the outbreak of plague in Kurunegala town. The Medical Officer of Health and his staff of Sanitary Inspectors were engaged in the town in dealing with the outbreak till the end of the year.

The statistics that follow, do not relate to the newly added areas, but only to the areas and population that were looked after at the end of 1931 in the eight units.

Births and Birth Rates.—The births amount to 14,518 giving a birth rate of 32 as compared with 36.7 in 1931 and 37 for the Island. The birth rates in the different units vary from 21 in Dehiwala division to 41 in Matara Gravets and Wellaboda pattu, Paranakuru korale, and Trincomalee units.

Deaths and Death Rates.—The deaths amount to 6,670 giving a crude death rate of 15 as compared with 22.1 in 1931 and 20.5 for the Island.

The death rates in the different units vary from 12 in Dehiwala division to 27 in Trincomalee Unit.

Infant Mortality.—There have been 1,966 infant deaths forming 28.7 per cent. of the total deaths in the units and giving an infant mortality rate of 135 as compared with 142 in 1931 and 162 the rate for the Island.

The rates in the different units vary from 92.4 and 109 respectively in the Matara Gravets and Wellaboda pattu and Panadure totamune units to 219 in the Trincomalee Unit.

Maternal Mortality.—There has been a total of 251 maternal deaths giving a maternal mortality rate of 17 as compared with 18 in 1931 and 19.2 the rate for the Island.

The rates in the different units vary from 13 at Yatinuwara Unit to 28 in Weudawili Hatpattu Unit.

Stillbirths and Stillbirth Rates.—Figures for stillbirths are available for urban areas of the different units. There have been a total of 120 stillbirths giving a stillbirth rate of 51.

Expenditure.—The cost to Government of this work for the year is Rs. 228,019 or 2.3 per cent. of the Department's actual expenditure as compared with Rs. 212,381 in 1931.

Health Education.—The following work was carried out:—

	1932.	1931.
Lantern lectures	98	152
Lectures without lantern	147	145
Cinema lectures	2	16
School talks	1,292	684
Village talks	2,329	1,324
Clinic talks	987	215
Health weeks	4	4

reaching an estimated population of 230,000 or 51.5 per cent. of the Health Unit population as compared with 152,000 or 34 per cent. in 1931. 372 conferences with Health Unit staff were held as compared with 325 in 1931 and training in health habits was carried out in 20 schools as compared with 14 schools in 1931.

Health Survey.—Health surveys were carried out in seven of the units: three in connection with extension of areas, one in Dehiwala division in connection with the original survey and in the other three they were resurveys. A total of 20,317 homes were surveyed.

Communicable Diseases.—2,088 cases of communicable diseases were notified and investigated as compared with 1,746 in 1931. Ayurvedic physicians have not notified at all in three of the units, viz., Paranakuru korale, Trincomalee, and Yatinuwara. While reporting by them is better at Panadure totamune and Dehiwala division, it is poor in Kalutara totamune, Weudawili hatpattu, and Matara Gravets and Wellaboda pattu.

2,316 first and 1,516 second doses of anti-typhoid vaccine were administered as compared with 1,912 and 999 respectively in 1931.

14,431 primary and 14,605 secondary vaccinations against smallpox were done as compared with 8,059 and 2,621 respectively in 1931. The great increase in vaccination during 1932 has been due to the outbreak of smallpox that commenced in the last quarter of the year in Colombo.

Hookworm treatment was carried out in all the units and a special effort made to increase the number of treatments especially among the villagers. A total of 26,590 were treated as compared with 17,687 in 1931.

12,410 laboratory examinations were carried out as compared with 13,359 in 1931 and 9,233 in 1930. Of this number, 5,204 were carried out at Health Unit offices and 7,206 in Colombo as compared with 2,592 and 10,767 respectively in 1931.

In the matter of tuberculosis control, 174 notifications were received as compared with 160 in 1931 and 82 in 1930. 671 home visits were made and 4,118 contacts were kept under observation and 285 of them received 476 periodical examinations and 47 patients were placed in institutions.

Malaria is a problem in three units, viz., Weudawili hatpattu, Trincomalee, and Paranakuru korale—in the last mentioned unit only in a part of it. Anopheline investigative work was carried out in the rural sections of Paranakuru korale and Weudawili hatpattu units. Control work in Trincomalee town and Kurunegala was carried out by the anti-malarial organization which is now supervised in these towns by the Medical Officers of Health of the Health Units. Quinine was distributed as a prophylactic measure in the schools of the Trincomalee and Weudawili Hatpattu Units during the malarial season. Making quinine mixture available to the villagers in the rural section of Weudawili Hatpattu Unit was continued during the fever season.

Anti-Rat Measures.—A total of 12,096 commercial premises were inspected for rat holes as compared with 7,873 in 1931. 2,721 had a total of 8,544 rat holes of which 4,645 or 54.5 per cent. were filled as against 42 per cent. in 1931.

Anti-Fly Measures.—2,233 fly breeding places were found and dealt with.

Maternity, Infant and Pre-school Hygiene.—The number of centres for child welfare work was reduced from 35 to 34 during 1932. The number of clinics held at them is 1,595 as compared with 1,276 in 1931 and 843 in 1930. To these centres 936 expectant mothers paid 2,223 visits as against 489 expectant mothers and 1,259 visits in 1931; 1,330 infants paid 11,598 visits as against 1,313 infants and 9,917 visits in 1931; 1,294 pre-school children paid 9,558 visits as against 1,360 pre-school children and 8,476 visits in 1931.

Forty-eight trained midwives made 63,544 ante-natal visits to 9,871 expectant mothers as against 53,129 visits and 8,538 mothers in 1931 at the rate of 6.4 visits per mother as against 5.8 in 1931. They attended at the delivery of 5,587 mothers as against 4,985 in 1931 and 2,712 in 1930 and paid 37,668 post partum visits at the rate of 6.7 visits per confined case as against 6.9 in 1931 and 5.3 in 1930.

Sixteen Public Health Nurses of whom five were in training, paid a total of 31,531 home visits as against 15,810 in 1931.

School Hygiene.—3,655 children were medically examined as against 5,669 in 1931 and 8,337 in 1930. 2,317 or 65 per cent. were found to be defective with a total of 4,133 defects or 1.7 defects per defective child. 1,844 or 44 per cent. of the defects found were corrected.

Consultation at Office.—There were 1,834 consultations at the office as against 1,594 in 1931 and 649 in 1930. Of these 791 were children and 1,043 adults.

Periodic Health Examination.—Nine out of the 150 persons who are attached to Health Units received a complete physical examination and advice during the year as compared with 46 in 1931.

Latrine Construction.—136 public latrines in all the units received 11,242 inspections. 101 defects were found and 5 latrines were newly built during the year.

77,468 dwellings were provided with 38,033 latrines at the rate of one latrine to two houses. During the year 1,724 new latrines were constructed as against 1,853 in 1931 and 1,305 were rendered to sanitary type as against 1,239 in 1931.

323 schools were provided with 415 latrines, *i.e.*, 1.2 latrines per school against one latrine to 1.2 schools in 1931. During the year 13 schools that were without latrines were provided with them.

Water Supply.—144 public wells received 3,123 inspections during the year. Two new wells were constructed, 25 partially improved and 4 radically improved.

24,324 private wells received 52,575 inspections. 236 new wells were constructed. 449 were partially and 172 radically improved.

342 springs and spouts received 663 inspections.

Licensed Trades.—There are 186 bakeries, 1,288 tea and coffee boutiques. 190 eating-houses, 10 aerated water manufactories, 72 meat stalls, 91 fish stalls, 189 vegetable stalls, 115 dairies, 247 laundries, 150 galas and cattle sheds, 2 soap manufactories, and 99 lime and brick kilns. All these have been inspected and received a total of 97,216 inspections.

40,579 defects were found. 19,470 of them were remedied, *i.e.*, 48.6 per cent. as against 46 per cent. in 1931 and 42.6 per cent. in 1930.

Food Sanitation.—8,826 head of cattle were inspected and 8,388 passed for slaughter as against 8,099 and 7,852 respectively in 1931. 6,636 goats were inspected and 6,381 passed for slaughter as against 4,381 and 4,367 respectively in 1931.

218 samples of milk were examined as against 172 in 1931 and 25 in 1930.

Meat, fish (fresh, dried, and salted) and vegetables were seized as unfit for human consumption on 25 occasions as against 31 in 1931 and 7 in 1930.

Housing.—193,559 inspections of private premises were made as against 154,524 in 1931 and 95,376 in 1930. 115,827 defects were found and 64,769 or 56 per cent. were rectified as against 91,641 and 43,351 in 1931.

100 public premises received 4,358 inspections. 1,696 defects were found and 946 or 55.6 per cent. were corrected.

323 schools received 3,937 inspections. 2,612 defects were found and 1,253 or 47.7 per cent. were corrected. Thirteen new latrines were installed in 13 schools. 270 out of 323 schools or 83.5 per cent. (as against 80.8 per cent. in 1931) of them were provided with adequate latrine accommodation.

1,549 applications for new buildings were received and 1,522 were reported on; 633 for additions and alterations and 621 were reported on; 649 for certificate of conformity and 618 were reported on.

Estate Health Work.—In 1931 there were 85 estates possessing resident labour in four of the units. This number during 1932 has been reduced to 73 in three of the units. Of the 73 estates, 54 were considered to be co-operative. Of the 54 co-operating estates, 43 have received 241 visits as against 36 estates and 130 visits in 1931. 126 defects were found at visits and 44 were corrected as against 201 defects and 40 corrections in 1931.

143 expectant mothers and 88 infants were kept under care, as against 75 mothers and 34 infants in 1931. 136 pre-natal visits have been made and 53 mothers delivered by Health Unit midwives.

It has been possible only for Public Health Nurses at the Kalutara unit to visit estates. Six estates there have been visited 26 times and 9 health talks have been given by them.

520 vaccinations against smallpox, 2,401 hookworm treatments, and 8 anti-typhoid inoculations have been carried out. Twenty-eight cases of communicable disease were reported and attended to.

Remarks.—Opposition to Health Unit work can now be said to have disappeared. It was merely a passing phase which was to be expected in the case of new undertakings. Health Units were discussed by the Executive Committee of Health who being convinced of their value, decided in favour of the retention of Health Unit work at Yatinuwara. The question also came up at a conference of Government Agents who expressed an opinion in favour of Health Units.

There is no question of the soundness of Health Unit work. It has set the standard and improved the quality of district health work and the extension of health work in the Island is now thought of on Health Unit lines.

The work as it progresses requires more and more devoted work on the part of Medical Officers of Health, Sanitary Inspectors, Public Health Nurses, and midwives.

8.—SANITARY ENGINEERING.

During the year additional anti-malarial drainage surveys were taken up by the Sanitary Engineering Division at Trincomalee, Chilaw, Puttalam, and Anuradhapura. A survey of the quarry pits at Maniaweli, Trincomalee, was completed and plans prepared for filling and drainage within this area. A survey of the Uppu Vellai section was also completed which provides for the drainage of a large area both difficult and expensive to control by means of anti-larval measures. Owing to the very low level of the existing outlet channel it is found necessary to realign and regrade this channel and to provide for an uninterrupted channel capable of accommodating the dry weather flow and normal flood water beyond the sand dunes to the sea by means of a timber box culvert with permanent sill and a properly protected sea outlet.

At Anuradhapura a scheme was prepared for improving the drainage of the area in the vicinity of the Wan-ela which at present constitutes a very dangerous breeding ground for the anopheline mosquito. The construction of this channel would have added considerably to the efficient development of anti-malarial drainage so vitally important to Anuradhapura.

Schemes for the drainage of the Divulgahakotuwa-ela and also for dealing with the swamps in the vicinity of Malwatu-oya lane were drawn up but as there appears to be little likelihood of these being proceeded with at the present time, permanent improvement in the malaria conditions of this town cannot be expected until such schemes are carried out.

Additional inlet drains were constructed along the Totuwila-ela channel and protective works undertaken on the Halpanu-ela channel.

Drainage improvements were carried out at Chilaw and Puttalam where large areas have been greatly improved. New outlet channels being cut and existing flood outlets realigned and regraded.

The Tenmaradchi area in the Northern Province was inspected at the request of the Government Agent, Northern Province, with a view to suggesting measures for the removal of flood water and the drainage of lowlying areas. Proposals were put forward for the construction of anti-malaria drains and outlets.

Experiments have been carried out at Chilaw and Kurunegala with various types of fish refuges in order to provide protection to the larvivorous fish used in the control of anopheline breeding in gala wells, &c.

Experiments were carried out with Abyssinian tube wells in the Puttalam area to ascertain whether the existing pottery wells, the source of much anopheline breeding, could be substituted by tube wells. So far, experiments have not proved very satisfactory.

Anti-malaria drainage works at Maho have been practically completed during the year and a very decided improvement of the town has been effected.

The division continued the handling of field equipment, oils, &c., to the anti-malaria campaign centres as usual.

The sanitary drainage of various hospitals has been carefully considered and a continuation made in the drafting of schemes for the following hospitals:—Balapitiya, Ingiriya, Jaffna, Kahawatta, Killinochchi, Kayts, Mannar, Puloli, Talaimannar, Tangalla, and Watupitiwela. Investigations regarding drainage have also been carried out at Chilaw, Mirigama, and Rakwana.

Drainage schemes for the towns of Panadure, Nuwara Eliya, Bogawantalawa, and Kalutara were completed and a scheme for Moratuwa is nearing completion. Construction work was commenced on the Kalutara scheme during the year.

Water supplies were inspected and reported upon at the following hospitals and dispensaries:—Alutnuwara, Anamaduwa, Batticaloa, Buttala, Bogawantalawa, Balangoda, Dickoya, Dolosbage, Kankesanturai, Kalmunai, Kegalla, Karawanella, Killinochchi, Lunugala, Manampitiya, Mihintale, Mullaittivu, Madulsima, Mirigama, Pussellawa, Ragama, Tangalla, Topawewa, Trincomalee, and Watawala.

Borings were carried out at Kalmunai and plans for a new scheme were prepared for the hospital and town supply. Water of very good quality was found in the vicinity. Investigations and surveys were made at Bogawantalawa and plans and estimates prepared for a water supply from an uncontaminated source. Plans for a scrubber filter at Dickoya were prepared and the work carried out. This has greatly improved the quality of the water prior to chlorination.

Plans were prepared for filtration and settlement chambers for the Pussellawa and Lunugala hospital supplies and for the filteration of the supply at Madulsima, the construction of which was completed.

Water supplies both for new and augmented supplies were reported on for the following towns.—Talawakele, Negombo, Gampola, Panadure, Mandapam, Rakwana, Maho, Kiriella, Nawalapitiya, Chilaw, Kadugannawa, Galaha, Batticaloa, Anuradhapura, Pelmadulla, and Tanjama.

A scheme for the augmentation of the supply for Nawalapitiya was completed. This scheme allows for the impounding of five million gallons of water within the existing catchment area by means of a short earthen dam, this will enable the requirements of the town to be fully met during dry periods at a very low cost.

Experiments were carried out at Chilaw with a view to improving the quality of the water by aeration and sedimentation. These experiments are still proceeding.

The new mains to the Diyatalawa water supply were chlorinated by the division before being put into service and the chlorination of water from both reservoirs at Haputale will shortly be put into operation.

Improvements to the Talawakele reservoir were suggested by alterations in the method of draw-off and in the reduction of turbidity by the construction of head drains, these works have been put in hand.

Plans and estimates were framed for a pumping scheme for the water supply of Tataparai Camp providing for elevated steel tank and main from the Mission well.

Preliminary investigations were carried out on the Kelani river with a view to ascertaining the physical properties of the water and determining the periods of settlement under natural conditions and with the assistance of coagulants. The investigations so far indicate that under normal wet weather conditions the turbidity of the river is by no means excessive and that satisfactory settlement can be effected by chemical means without great expense.

The activated sewage disposal plan at Ratmalana is nearing completion and a commencement has been made in the installation of the pumps and aerator machinery. Drawings were prepared for an improved type of glazed sludge filter and other detail plans.

Experimental bored-hole latrines were constructed at Matara and at Madhu, and improvements in the design of bored-hole equipment have been made to enable the sinking of bored-hole to be carried out more expeditiously.

Plans and estimates were made for the drainage of latrines for the Karaiur Reclamation Scheme and plans for proposed meat markets at Nuwara Eliya, for Isolation Ward, Polgahawela, and for special type manure pits and depôts for fly control at Nuwara Eliya.

Type plans for the following were revised:—Bakery, laundry, public market, public latrines, latrines for schools, tenements, temporary latrines, pit latrines, bored-hole latrines, meat stall, and incinerators.

Investigations were carried out in the Kurunegala plague area with reference to the construction of back lanes and the detailed alterations found necessary to the property within the area.

Type plans of the following were drawn up for the guidance of the Urban District Councils indicating the improvements required, viz., boutiques, bucket latrines, kitchens, (with flues) grain store, rice shop, and rice bin.

During the year over 720 plans and enlargements were made and all mosquito survey maps for the various anti-malaria surveys were brought up-to-date.

B.—MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

General.—During the period under review which was one of arrested development resulting from the financial depression the work of Health Education made satisfactory progress.

Co-operation with Education Department.—As the school offers an unrivalled field for health education, possibilities for health work through the co-operation of the Education Department were thoroughly explored and an agreement was arrived at by which the Education Department made itself responsible for health education in schools on the understanding that the Department of Medical and Sanitary Services were prepared to act in an advisory capacity leaving the administrative work in the hands of the Education Department. This cleared all possible misunderstandings and a complete programme of health education is being introduced into the schools of the Island.

Vacation Course for Inspectors of Schools.—In order to acquaint Inspectors of Schools with the basic facts about health and modern principles of health education the Superintendent of Health Education organized a residential vacation course from April 14 to 21, 1932. The course was attended by District Inspectors, Assistant Inspectors, Staff of training schools and representatives of all the educational divisions of the Island, numbering 32. In addition to the formal lectures on various aspects of health and disease delivered by Medical Officers of Health and followed by stimulating discussions, sessions were allotted to conferences after dinner on matters of wide interest such as co-operation between health and educational authorities, sex-hygiene in schools, health syllabus at public examinations, the midday meal and health in schools led by senior members of the Education Department and the Department of Medical and Sanitary Services and prominent social service workers. There were organized excursions to the offices of the City Medical Officer of Health, Municipal Health Centres, and the Kalutara Health Unit. At the end of the course a Continuation Committee was appointed to follow up the work in the respective divisions.

The Training of Teachers.—One of the most vital and urgent problems in carrying out a programme of health education being the training of teachers this matter received due attention during the year. From January 4 to 9 an intensive health education course was given to a group of 68 teachers of English schools in the Jaffna Peninsula in connection with the residential refresher course organized by the Divisional Inspector of Schools. The lectures were delivered by the Medical Officer of Health, School Medical Officer, and the Superintendent of Health Education. Every teacher who attended the course was given a complete physical examination by the two doctors and school medical inspection has received support from these teachers ever since. The Hon. the Minister of Education was present on the last day of the course and particularly emphasized the importance of health education which he described as a nation building subject. The course was residential and the daily inspection of the living rooms, kitchens, and lavatories and the emphasis laid on personal cleanliness had a beneficial effect on the teachers.

Training classes for teachers were started at Piliyandala, Badulla, Kalmunai, Matale, Horana, Gampaha, Chilaw, Tangalla, Kuliyapitiya, Anuradhapura, Kandy and Beruwala. The number in training at the end of the year was 475. According to the new conditions for the award of the health certificates some of the teachers who have completed the course are now engaged in practical application under observation.

At the Nattandiya Centre, which was the first to complete the course under the new regulations, the occasion of the distribution of the certificates was utilized for the organization of a very successful school health demonstration in which all the schools of the area represented at the lecture course displayed health education material such as models, posters, &c., and gave an exhibition of physical drill, boxing, health songs, and health dramas.

The enthusiasm created by this course expressed itself in one instance in the construction of private latrines by school children in order to be able to use them and score marks in their daily health habit charts.

During the period of practical application some outstanding health workers were discovered in other centres. The formation of a regional Health Association, the publication of manuscript health journals, the production of high class health dramas and active participation and assistance in departmental campaigns are an indication that the training courses are pregnant with great possibilities. Teaching exhibits were fitted up by request in connection with the residential vacation course for vernacular schools in the Western Division at Udugampola and also on the occasion of the annual general meeting and conference of the Colombo Teachers' Association.

Publications.—The Sinhalese and Tamil editions of the Departmental Health Talks were ready for the press early in the year but Government did not authorize their publications for financial reasons.

Only four numbers of Health News were issued during the year for the same reasons, but they contained more information and descriptions of the manifold activities of the Department than in previous issue and many letters of appreciation were received by the editor from readers both in Ceylon and Overseas.

The Sanitary Inspectors' Journal being a verbatim report of their first District Conference was edited by the Superintendent of Health Education and the continuation work was undertaken by a representative committee.

Press.—The weekly health articles received prominence in the vernacular newspapers. Forty-three articles in Sinhalese and 47 in Tamil papers were published during the year.

Special articles were contributed on the subjects of Maternity and Child welfare, Health Units, Anti-Plague measures, Vaccination and Malaria Control in order to influence public opinion in favour of the work of the Department. By arrangement with the prominent English Newspapers the publication of full reports of all official and unofficial health activities in the Island was secured during the year. The Press gave hearty support to all health activities and frequently backed the efforts of the Department with editorial comment.

Radio Talks.—Fifty-three radio talks were given in English, Sinhalese and Tamil. Of these 13 were given to school children under the Schools Broadcasting Scheme which is a new feature inaugurated during the year. Some of the talks were reproduced in the English and Vernacular papers. The English talks were planned in order to bring home to the public certain definite aspects of health work and they were correlated to the special articles published in the Press and in Health News.

Lectures.—The Medical Officer of Health gave 178 lectures illustrated with lantern slides or cinema films in their respective areas as a part of their routine activities. The Senior Medical Officer of Health gave talks on plague to crowded houses in Kurunegala and Gampola during the epidemic.

Health Weeks.—The Gunaratne Shield, the local award for the best Health Week during the year, was awarded to the Dehiwala-Mt. Lavinia Health Week Committee. The same Committee was highly commended by the Imperial Baby Week Authorities in London. During the year Health Weeks were celebrated at Jaffna, Ganaduwa, Matale, Dondra, Kadugannawa, and Kalutara.

Health Education Material.—3,000 copies of an original poster on soil pollution with an explanatory note in Sinhalese and 2,000 in Tamil were turned out during the year and broadcast through the staff of the Hookworm Campaign, Medical Officers of Health, Sanitary Inspectors, Urban District Councils, Local Boards, Government Agents and Assistant Government Agents. Copies were posted up in all hospitals and dispensaries and in 215 railway stations.

A set of four posters on the hookworm disease was made and these will in due course be duplicated for the educational work of the Campaign.

Twenty-three original posters illustrating various points in Health Education were turned out during the year and these will be improved and added to the list of permanent exhibits.

Two sets of portable panels on maternity and child welfare were turned out in colours for use at health talks. 193 printed posters issued by the Colombo Municipal Council were purchased in bulk and mounted on stiff boards for use at health demonstrations.

A set of 17 slides on nutrition was purchased from India. Numerous commercial advertisements were adapted for use as health posters thus introducing a new type of inexpensive yet effective health education material.

Permanent Health Exhibit.—A permanent health education exhibit was fitted up in a spacious room in the Echelon Barracks, Fort, but it had to be dismantled before it was completed in order to make room for the Income Tax Department and after many efforts a room in the Controller of Revenue's old office was secured for the purpose. Owing to the need for structural alterations the room was not fitted up during the year but all arrangements are complete for housing a selection of departmental exhibits in the building.

C.—TRAINING OF SANITARY PERSONNEL.

No training class for Sanitary Inspectors was held during the year.

A six months' course of training for five Public Health Nurses was completed at Kalutara while one Public Health Nurse finished her six months' training in midwifery at the Lying-in Home in Colombo.

D.—RECOMMENDATIONS FOR FUTURE WORK.

The lines on which future work have to be developed were stated in my report for 1931. As funds and trained personnel are still not available no development is possible till the financial position improves and all that could be done is the maintenance of existing services.

IV.—PORT HEALTH WORK AND ADMINISTRATION.

Ceylon is guarded against the introduction of dangerous infectious disease from abroad by the health service at each of its ports and by the two Quarantine Camps at Mandapam and Tataparai in Southern India. The chief sources of danger to the Island are (*a*) the grain traffic with Rangoon and other Burmese ports in respect of plague—some 6,000,000 bags of rice are imported annually of which more than 4,500,000 come from Rangoon—and (*b*) the passenger and immigrant labour traffic between India and Ceylon by the Dhanuskodi-Talaimannar and the Tuticorin-Colombo routes, in respect of cholera and smallpox. Usually more than 200,000 persons a year enter Ceylon by these two routes which are protected by the Quarantine Camps of Mandapam and Tataparai respectively, but the number in 1932 fell to 143,764.

The technical work of the Quarantine Department is performed by medical officers, apothecaries, and vaccinators of the Department of Medical and Sanitary Services. The port of Colombo has a whole-time staff of four medical officers, while at the fifteen minor ports the local medical officers give part of their time to the work. The surveillance of travellers after arrival at their destinations in Ceylon is also carried out by medical officers of the department.

Colombo.—2,588 British and foreign vessels and 228 Indian sailing craft called at the port, as against 2,958 and 230 respectively in 1931. Two vessels arrived infected with smallpox and 6 with chickenpox. The patients were landed and sent to the Infectious Diseases Hospital and the ships kept in quarantine until vaccination, disinfection and other control measures had been completed.

During 1932 a greater number (67) of cases of human plague was recorded in Colombo than in any other seaport in the world. Since plague is endemic in Colombo careful measures are taken in accordance with Article 13 of the International Sanitary Convention, 1926, to prevent infection reaching shipping in the harbour. All ships are moored away from the shore and work in "restricted quarantine", and the harbour lighters are subjected to fortnightly deratisation with sulphur dioxide. Clayton gas apparatus is available for the deratisation of small vessels with empty holds, but the port does not possess the means of dealing with larger ships or of carrying out fully the provisions of Article 28 of the International Convention.

The harbour water boats were cleaned and cement-washed every quarter and inspected by one of the Port Health Officers before use.

A venereal diseases clinic for seamen has been maintained at the port since 1921 and an account of its work appears in Section VI. of this report.

Minor Ports.—539 steamers and 1,982 sailing vessels called at the 15 minor ports. 365 of the steamer visits were at Talaimannar in connection with the ferry service to India. All passengers arriving at Talaimannar had passed through Mandapam Quarantine Camp or had been inspected by Medical Officers of the Camp. No passengers are permitted to land at the other small ports in the northern part of the Island and ships visiting these ports work in strict quarantine. This is a necessary precaution since the shipping is mostly engaged in coastwise traffic with small ports in districts of Southern India where smallpox and cholera are more or less endemic, while a few boats bring rice from Burmese ports.

Mandapam Quarantine Camp.—The continued depression in trade contributed to the further decrease in the number of persons who passed through the Camp *en route* for Ceylon.

The following are the figures for the last 5 years:—

Year.	Estate Labourers.	Passengers.	Total.
1928	133,712	66,918	200,630
1929	105,095	70,923	176,018
1930	91,422	62,162	153,584
1931	68,337	50,474	118,811
1932	50,869	45,972	96,841

All estate labourers remain 5 days in the Camp, where they are disinfected, vaccinated, treated for ankylostomiasis, and subjected to a careful medical inspection. First and second class passengers and their personal servants are medically inspected at the railway station and usually allowed to proceed but are subjected to surveillance for 12 days after arrival in Ceylon. The majority of third class passengers pass through the Camp.

Sixteen passengers and 6 estate labourers were rejected on account of leprosy and 18 estate labourers and 7 passengers were rejected for other diseases, viz., 10 smallpox and chickenpox convalescents, 2 debility, 4 whooping cough, 3 advanced pregnancy, 3 syphilis, 1 cancer, 1 hysteria, and 1 epilepsy.

The general hospital of the Camp has accommodation for 20 patients and there were 473 admissions of which 21 proved fatal.

The infectious diseases hospital has 12 beds for smallpox and 16 for cholera. No cases of cholera occurred during the year, but there was one case of smallpox which recovered. Other infectious diseases were also treated, viz., chickenpox 27 cases, measles 23, and mumps 3.

7,266 persons who paid 13,882 visits were treated at the outdoor dispensary of the Camp.

Treatment for ankylostomiasis was given to 49,308 labourers out of 51,458 examined.

31,774 passengers and 50,014 estate labourers were vaccinated against smallpox.

The sanitary condition of the Camp remained excellent throughout the year. The Camp has its own water supply which is carefully protected and subjected to frequent laboratory examinations, its own electric lighting plant, and a water carriage system of drainage and sewage disposal. The food supply and kitchens were carefully supervised and remained satisfactory.

The examination for cholera carriers which was started in September, 1930, was continued throughout 1932 in the Camp laboratory. 32,295 specimens were examined and from 32 of them cholera vibrios were isolated. 475 other specimens were examined; of these 108 were for cases of leprosy, 17 were found positive.

Tataparai Quarantine Camp.—46,923 passengers proceeding from India *viâ* Tuticorin to Colombo passed through the Camp, as against 50,771 in 1931 and 52,507 in 1930. Ninety-eight per cent. of the passengers were petty traders and bungalow, garden, and rickshaw coolies, and the majority (35,479) came from the Tinnevelly district where cholera was more or less endemic.

There were 50 rejections—31 for leprosy, 6 convalescing from smallpox, 4 for chickenpox, and 9 for other diseases.

43,833 passengers were vaccinated, 30,479 at the Camp and 13,354 at Tuticorin.

2,147 persons were treated at the Camp dispensary. There were 1 case of cholera, 1 case of smallpox, and 1 death from acute appendicitis.

The Camp has an area of 33.82 acres. During the year a bungalow for the Superintendent, 2 wards with kitchen for Brahmins, 2 wards with kitchen for non-vegetarians, 1 ward with kitchen for Muslims, 3 sets of latrines, 3 sets of lines (24 rooms) for cooks and 1 set of lines (14 rooms) for scavengers were built. The school building was extended and the boutiques were remodelled.

Trial borings for water supply were made and it is expected that a satisfactory supply will be available in the near future.

Food of good quality and in sufficient quantity was served throughout the year. The catering was done departmentally.

The Camp was maintained in a clean condition and the health was satisfactory.

Surveillance.—99.64 per cent. of the 45,957 persons from Southern India entering Ceylon under surveillance reported at their destinations and completed the 12 days' period of surveillance. Among these persons 1 case of smallpox, 3 of dysentery, 1 of enteric, 1 of pneumonia, 1 of gastric dilatation, and 5 of chickenpox were detected during their period of surveillance.

V.—MATERNITY AND CHILD WELFARE.

Infant Mortality.—The following statement gives in tabular form the figures relating to infant deaths and infant mortality rates for 1932, 1931, and the average for 10 years 1922 to 1931:—

	Average, 1922–1931.	1931.	1932.
Infant deaths—			
Whole Island	34,990	31,440	32,356
Urban areas	4,494	4,195	4,112
Rural areas	30,496	27,245	28,244
Infant mortality rates—			
Whole Island	177	158	162
Urban areas	212	188	178
Rural areas	165	154	160
Ceylonese	174	155	159
Indian immigrants	215	184	188
European	29	25	86

Of the 32,356 infant deaths convulsions have been responsible for 7,491 or 23 per cent. and debility for 7,012 or 21.6 per cent. As in previous years these conditions have been the two chief causes of deaths among infants. The number of infant deaths recorded for 1932 shows an increase of 916 deaths over the deaths in 1931 in which year there were more than 4,000 deaths fewer than in 1930. The 1932 deaths are well below the average for the 10 years 1922 to 1931.

The infant mortality rate for 1932 shows an increase of 4 per 1,000 and the rate for 1931 which is the lowest recorded in Ceylon, and is well below the average for 10 years. There is a decrease in the rate for the urban areas. The rate for the Europeans shows an increase.

Maternal Mortality.—The following table sets out the number of maternal deaths and the maternal death rates for 1932, 1931, and the average for 10 years 1922 to 1931 :—

	Average 1922–1931.	1931.	1932.
Maternal deaths—			
Whole Island	3,874	4,142	3,821
Urban areas	622	702	712
Rural areas	3,252	3,440	3,109
Maternal mortality rates—			
Whole Island	19·8	20·8	19·2
Urban areas	29·2	31·4	31·3
Rural areas	18·6	19·5	17·6

The number of maternal deaths recorded for 1932 shows a saving of 321 lives of mothers at child birth as compared with the deaths for 1931 and 510 compared with the deaths for 1930.

The maternal mortality rate for the year of 19.2 shows a reduction 1.6 per 1,000 over the rate for 1931.

Puerperal sepsis and puerperal convulsions contribute 82.7 per cent. of the total deaths at child birth. Of the 3,821 deaths, 1,328 or 34.8 per cent. have been caused by puerperal sepsis and 1,832 or 47.9 per cent. by puerperal convulsions.

Stillbirths.—Stillbirths are registered only in urban areas. During 1932 there were 1,749 stillbirths as compared with 1.643 in 1931, 1,776 in 1930 and 1,577 the average for the years 1922 to 1931.

The stillbirth rate for 1932 is 76.8 per 1,000 live births as compared with 73.5 in 1931, 76 in 1930 and 74.6 the average for 10 years 1922-1931.

There is an increase in stillbirths by 156 over the 1931 figures and by 170 over the average for 10 years.

While the infant and maternal mortality rates show a tendency to come down the stillbirth rate shows no such tendency and continues to be high.

Ante-natal and Baby Clinics.—At the ante-natal clinics held at the De Soysa Lying-in Home 2,860 mothers paid 3.724 visits as against 2,567 mothers and 3.216 visits in 1931.

In addition to these, 2.493 combined ante-natal and baby clinics were held in various parts of the Island at 54 centres as against 2,089 clinics at 59 centres in 1931.

Visits paid to these clinics during the year as compared with those in 1931 are as follows :—

	1931.	1932.
Expectant mothers	2,673	2,894
Infants	17,623	20,583
Pre-school children	17,466	11,929

Midwifery.—111 trained midwives under supervision were provided by Government (68 at hospitals and 43 at Health Units) as against 103 in 1931; 64 by Local Authorities and 89 by estates as against 58 and 109 respectively in 1931; making a total of 264 midwives as against 270 in 1931. The decrease has been among estate midwives due to closing down of estates on account of the depression. There is about an equal number of trained midwives doing private work.

The registration of midwives under Ordinance No. 26 of 1927 is compulsory only in the City of Colombo where the number registered amounts to 284 as against 204 in 1931. One Local Authority which applied for registration of midwives in its area had the request refused as the Department of Medical and Sanitary Services could not agree to train all the untrained midwives in this area.

The examination of pupil midwives is controlled by the Ceylon Medical College Council. Training is carried out at the De Soysa Lying-in Home in Colombo and the McLeod Mission Hospital at Inuvil. During the year 68 women received instruction at the De Soysa Lying-in Home, 56 being pupil midwives and 12 trained nurses as compared with 66 and 20 respectively in 1931.

Maternity Beds in Hospitals.—At the De Soysa Lying-in Home in Colombo there were, in 1931, 83 beds and this number was increased to 99 in 1932 by arranging for the nurses to live in quarters outside the hospital premises. Of the remaining 106 Government hospitals with a total of 11,327 beds 72 had maternity wards with a total of 447 beds in 1931. The other hospitals, although not provided with maternity wards, take maternity cases into their general wards. During 1932 owing to lack of funds it was possible to add only 4 beds—at Tissamaharama Hospital—to the number of maternity beds.

Public Health Nursing.—At the end of 1931 there were 12 Public Health Nurses: 7 trained and 5 in training. During 1932 4 more nurses were selected and given their training at the Kalutara Totamune Health Unit thus bringing up the total of Public Health Nurses at the end of 1932 to 16. During the year every Health Unit was provided with at least 1 Public Health Nurse. In the 1932-33 budget provision has been made for recruiting 3 more nurses.

Voluntary Associations and Child Welfare Work.—The assistance of voluntary associations continues to be received in connection with the carrying out of child welfare work. There are in the Island 28 such associations under the names of Social Service Leagues, Health Leagues, Child Welfare Leagues, &c., actively associated with the work as compared with 24 associations in 1931.

The total income of these societies as far as is known has been Rs. 19,268 during the year of which Rs. 12,524 or 65 per cent. has been expended on child welfare work.

Twelve Local Authorities, viz., those of Panadure, Moratuwa, Matale, Jaffna, Kalutara, Kurunegala, Ratnapura, Kandy, Trincomalee, Nuwara Eliya, Galle, and Dehiwala, contribute to the finances of these voluntary associations.

Work of Lady Doctors.—Of the 5 lady doctors stationed at the following towns, viz., Beruwela, Weligama, Batticaloa, Trincomalee, and Puttalam, for work among women and children chiefly of the Muslim population, the lady doctor at Weligama was withdrawn at the end of August leaving only 4 from that period. They attend to sick women and children at the dispensary, visit in the homes free of charge in the case of the poor those who cannot attend at the dispensary, hold ante-natal and baby clinics and do a certain amount of educational work. The doctors at Beruwela and Trincomalee work in conjunction with the Health Unit at the places. The others work without adequate staff for effective work under difficulties.

The five doctors (only four from the end of August) paid 5,434 home visits and attended to, both in the home and at the dispensary, 199 mothers at child birth, 461 puerperal cases, 1,674 sick expectant mothers, 2,578 sick infants, and 9,812 sick pre-school children. They have held 552 clinics at 34 centres at which 557 expectant mothers paid 2,201 visits; 952 infants paid 5,001 visits and 3,430 pre-school children paid 10,141 visits.

VI.—HOSPITALS, DISPENSARIES, AND VENEREAL DISEASES CLINICS.

HOSPITALS AND DISPENSARIES.

General Remarks.—All parts of the Island are generously provided by the State with hospitals and dispensaries. In and around Colombo are the General Hospital (939 beds), Lying-in Home (99 beds), Eye Hospital (56 beds), Women's Hospital (45) beds, Children's Hospital (82 beds), Female Venereal Diseases Hospital (29 beds), Police Hospital (32 beds), Tuberculosis Hospital (349 beds), Tuberculosis Sanatorium (72 beds), and Infectious Diseases Hospital (168 beds). Elsewhere there are 93 Government hospitals with 6,643 beds and 2 Leper Asylums with accommodation for 684 patients. In addition there are the Prison hospitals and Lunatic Asylum mentioned in Section VII. with accommodation for 2,271 patients. The number of hospital beds provided by Government is approximately 2 per 1,000 of population. Three hospitals, viz., Mihintale and Ratmale in the North-Ceneral Province and Bathfield in the Southern Province, were closed on April 1,1932. One Sanatorium of 44 beds at Kankesanturai in the Northern Province was opened during the year.

The number of central and branch dispensaries and visiting stations maintained by Government increased from 603 in 1931 to 628 in 1932. In addition to these the following special institutions were maintained for the treatment of out-patients:—King Edward VII. Memorial Anti-Tuberculosis Institute, Colombo; Grenier Ear, Nose, and Throat Clinic, Colombo; Dental Institute, Colombo; and special clinics associated with the Kandy, Galle, Jaffna, Batticaloa, and Badulla hospitals for the treatment of eye diseases.

During the year under review there was a decrease in the number of estate hospitals maintained by the proprietors of estates from 87 to 86 and the number of estate dispensaries, 720, remained the same.

207,922 in-patients with 13,011 deaths, giving a mortality rate of 6.25 per cent., were treated in the various Government hospitals. The figures for the previous year were 191,864, 12,641, and 6.58, respectively. In the Government dispensaries and out-patient departments attached to Government hospitals 3,965.209 patients who paid 6,184,281 visits were treated, as against 3,714,348 and 5,748,376 visits the previous year.

The diseases treated at hospital out-patient departments and dispensaries were as follows:—

I.—*Communicable Diseases.*

Enteric fever	599
Fevers of obscure causation	4,881
Malarial fever	1,390,410
Cerebral malaria	52
Malarial cachexia	115,197
Malarial cirrhosis	535
Measles	210
Whooping cough	2,822
Diphtheria	4
Influenza	142,556
Mumps	82
Dysentery (all forms)	26,216
Amoebic hepatitis and liver abscess	42
Leprosy	34
Erysipelas	63
Chickenpox	200
Dengue	—
Yaws	23,208
Hydrophobia	2
Tetanus	26
Pulmonary tuberculosis	1,499
Other tuberculous diseases	262
Syphilis (all varieties)	5,214
Soft chancres	179
Gonorrhoeal complications, (arthritis, rheumatism, &c.)	2,104
Gonorrhoea (acute and chronic)	14,426
Filarial diseases	470
Acute rheumatic fever	660
Puerperal fever	3,128

II.—*General Diseases.*

Malignant tumours—carcinoma, sarcoma	53
Non-malignant tumours	1,562
Chronic rheumatism	247,955
Arthritis (acute and chronic)	4,029
Diabetes mellitus	637
Anaemias (of unknown causation)	20,469
Goitre	75
Leukaemias	4,330
Acute poisonings	159
Other general diseases	2,549

III.—*Local Diseases.*

Diseases of the nervous system	26,881
Diseases of the eye	74,547
Diseases of the ear	39,402
Diseases of the heart and blood vessels	4,923
Diseases of the lungs and pleura	178,909
Diseases of the gastro-intestinal tract	396,683
Diseases of the liver and gall bladder	4,644
Diseases of the urinary system	18,139
Diseases of the generative systems	32,779
Diseases of the spleen	6,041
Diseases of the lymphatic system	6,130
Diseases of the skin and cellular tissues	173,732
Diseases of the bones and joints	4,247
Ankylostomiasis	303,769
Other helminthic diseases	333,851
Ulcers	194,489
General injuries	21,015
Local injuries	102,202
Other local diseases	24,927

REPORT ON COLOMBO HOSPITALS.

A brief summary of the work done in the chief Colombo hospitals is given below:—

General Hospital, Colombo.—The number of patients treated in the hospitals during 1932 was 20,343 (1,221 paying and 19,122 non-paying patients), as compared with 19,122 (1,261 paying and 17,861 non-paying) in the previous year. Of the total cases treated there were 2,206 deaths, as against 2,172 in 1931. The daily average sick in hospital was 958.77.

The maximum and minimum number of patients in hospital on any one day during the year was as under:—

	Maximum.	Minimum.
Paying section	83 on 8.6.32	37 on 1. 1.32
Non-paying section	1,023 on 15.7.32	810 on 9.10.32

The number of operations performed was 3,371 of which 3,013 were performed in the hospital and 358 (minor operations) at the Out-patients' Department, as against a total of 2,863 (2,584 in hospital and 279 on out-patients) in the previous year.

The total number of patients treated at the Out-patients' Department amounted to 34,445, as compared with 28,620 in 1931. The number of visits paid by patients was 188,755 with a daily average of 603.

Pathological Department.—The staff consists of a full-time Pathologist and two qualified assistants. The following number of specimens was examined and reported upon:—

Urines	10,321
Faeces	8,038
Gastric contents	460
Sputa	2,363
Bloods	7,996
Cerebro spinal fluids	597
Ascitic pleural and other fluids	113
Smears	554
Tissue Sections, General Hospital	362
Tissue Sections, Outstation Hospitals	176
Tissue Sections, Post-mortem room	201
Total	31,181

The total number of specimens examined during the year 1932 was 31,181, as against 31,305 in 1931 and 35,253 in 1930. The decrease is due principally to an instruction that the ordinary qualitative examination of urines should be carried out in the wards of the hospital.

X'Ray Department.—4,040 patients in the non-paying section and 629 patients in the paying section, making a total of 4,669 patients, underwent X'ray examination, as against a total of 4,056 in 1931. In the electro-therapeutic section 7,710 sittings were given to non-paying patients (including patients from the 2nd class paying wards from whom no charges are recovered) and 1,467 sittings to paying patients, making a total of 9,177, as compared with 5,718 the previous year.

106 cases had radium treatment for different diseases, chiefly cancer, as compared with 78 cases in 1931.

Dental Institute, Colombo.—The professional staff consists of one qualified Dental Surgeon, two Apothecary Assistants, a Matron, and a Nurse.

16,931 new patients were treated during the year under review, as against 12,133 in 1931. The total number of visits made by the new and old patients were 31,292.

The number of patients was made up as follows:—

Patients sent from hospital wards	846
Children attending the school clinic	1,838
Other patients	14,247
	16,931

The following treatments were given:—

Extractions	13,964
Cleaning and filling	6,798
Temporary relief	5,454
Dressing	5,076

Seventeen cases were operated on at this Institute.

The Ear, Nose, and Throat Department.—The Grenier Ear, Nose, and Throat Clinic was transferred from the Victoria Memorial Eye Hospital to the General Hospital on May 1, 1932. This clinic had been held at the Eye Hospital twice a week. Its transfer was much needed in view of the increasing numbers of the ear, nose, and throat patients who have to be treated at the Out-patient Department of the Eye Hospital, with its limited accommodation and facilities for examination of both the eye, and ear, nose, and throat patients during the same time.

The clinic is at present held at the Out-patient Department, General Hospital, on three afternoons a week—Tuesdays, Thursdays, and Saturdays—from 1 to 4 o'clock.

The numbers attending the clinic have been gradually increasing every month and amounted to 8,322 for the eight months, May-December, 1932.

The school children's clinic is held on Tuesdays and Thursdays. The number of children who attended the clinic between May and December amounted to 484.

Eight beds, four for males in the General Surgical Ward " A ", and four for females in the Lower Female Surgical Ward, are allotted to the Surgeon for diseases of the ear, nose, and throat. The House Surgeons of the wards where these beds are allotted attend to his patients also.

The number of patients treated in the wards was 141. Nearly always there have been more than four male and four female patients in the wards.

Operations are performed on two days a week (Mondays and Fridays) at the Paying Section Theatre commencing at 1 P.M.

Both minor and major operations are performed on these two days. The minor operation cases are sent to the ward and detained there for a few hours till they are fit to be removed from the hospital. The total number of operations performed during the eight months May-December, 1932, amounts to 343.

De Soysa Lying-in Home.—Although a small increase in the bed strength has been made, the urgency for increased accommodation to enable the work to be carried out on improved lines is once more emphasized.

The number of cases under treatment in 1932 was 5,658, as against 5,716 in the previous year and 5,410 in 1930. The daily average number of beds occupied was 119.93 and the mortality rate was 2.2, as compared with 114.35 and 2.2, respectively, the previous year.

There were 129 maternal deaths and of these 40 were due to accidents of childbirth, 16 to puerperal causes, and 73 to general causes, such as ankylostomiasis, dysentery, heart failure, pyelitis, &c.

The number of live births was 3,526. Of these infants, 3,255 left the hospital alive while 271 died after delivery, as against 3,345 and 216, respectively, in 1931. 496 obstetric operations were performed during the year, necessitating the use of forceps in 211 cases, craniotomy in 25 cases, decapitation in 3 cases, internal (60) and external (21) podalic version in 81 cases, evacuation of the uterus in 109 cases, cleidotomy in 14 cases, and other minor operations in 53 cases. Labour was classified as normal in 3,446 cases. In 35 cases of placenta praevia 11 infants were born alive and 24 were born dead; 29 mothers recovered and 6 died. In 123 cases of puerperal eclampsia 111 mothers recovered and 12 died; 53 infants were born alive, 49 were born dead. In 25 cases of contracted pelvis 11 infants were born alive; 13 were born dead and 1 was undelivered; 24 mothers survived and 1 died.

This institution continued to be the chief training school for midwives in the Island. The professional staff consisted of one Medical Superintendent, one Assistant Obstetrician, and three qualified House Officers.

The Victoria Memorial Eye Hospital.—There are 7 beds and 1 cot in the paying section and 43 beds and 5 cots in the non-paying section of this hospital.

The Ear, Nose, and Throat Department was transferred to the General Hospital in April, 1932, owing to lack of accommodation.

25,097 new out-patients were treated during the year, as against 29.387 out-patients in 1931. Of the cases treated 22,606 were eye, 1,757 ear, 260 nose, and 474 throat cases. The total number of visits made by the new and old patients were 66,261.

There were 107 in-patients remaining in hospital at the beginning of the year and 1,735 patients were admitted during the year, as compared with 80 and 1,463, respectively, in the previous year. Of these 1,746 were discharged with 2 deaths.

The total number of ophthalmic operations performed on in-patients during the year was 709 and on out-patients 2,251, the corresponding figures for the previous year being 566 and 2,981, respectively. Approximately 393 individual cases of cataract were operated on during the year. 2,045 refraction cases were attended to in 1932, as against 2,324 in 1931.

The School Clinics continued to be well attended. 936 eye cases and 128 ear, throat, and nose cases (total visits 2,301) received treatment. Fifty-seven operations on tonsils and adenoids were done for the 4 months ending April, 1932.

The Lady Havelock Hospital for Women and Lady Ridgeway Hospital for Children.—The total number of patients admitted during the year was 3,157 and with 121 patients remaining from 1931, 3,278 patients (women 1,069, children 2,209) were treated in 1932, as against 3,034, 114, and 3,151 patients, respectively, in 1931.

The daily average sick was 130.05, as against 126.9 in 1931, and 126.8 in 1930. The number of paying patients treated was 131, as against 153 in 1931.

The total number of deaths was 576; of these 78 were women and 498 were children, showing a mortality rate of 7.3 per cent. for women and 22.5 per cent. for children. The high death rate in the case of children was due to the fact that many children were brought to the hospital in a moribund condition and died within a few hours of admission.

The number of surgical operations performed was 777. Of these 562 were major and 215 minor operations. The operation mortality rate was 3.4 per cent., as against 2.3 in 1931.

In the training school for nurses there were 58 pupils of whom 19 were first year pupils. The professional staff of this hospital consists of the Lady Doctor in charge and two Assistant Medical Officers.

Female Venereal Diseases Hospital.—The total number of patients admitted during the year was 365 and with 21 patients remaining from 1931, 386 patients were treated in 1932, as against 351 in 1931. The daily average of patients was

22.53, as against 23.53 in 1931. The total number of deaths was 2 showing a mortality rate of 0.52 per cent. The principal diseases treated were syphilis, 158 cases with 1 death, and gonorrhoea, 169 cases with 1 death.

Usually female cases of syphilis and gonorrhoea in the acute stage are treated in this hospital and when hospital treatment is not necessary they attend as out-patients (*vide* report under Veneral Diseases Clinics page 69), for continuation of treatment.

During the year 28,164 patients who paid 54,443 visits were treated at the Out-patients Department of this hospital. Malaria, influenza, ankylostomiasis, veneral, digestive, and skin diseases were the most prevalent ailments treated.

The Infectious Diseases Hospital (Angoda), Colombo.—During the year under review, smallpox occurred in an epidemic form. A number of large temporary wards were quickly built to supplement the limited accommodation available in the two permanent smallpox wards. Chickenpox is endemic in Ceylon and was much more prevalent than usual in 1931.

There remained 94 patients in hospital at the end of 1931 and 2,109 patients were admitted during the year making the total treated 2,203, as against 1,314 during the previous year. Of these 201 cases proved fatal, giving a mortality rate of 9.16 per cent., as against 10.27 per cent. during the previous year.

The following are some of the infectious diseases treated and the number of deaths in 1932:—

	Number treated.	Deaths.
Smallpox	83	13
Enteric fever	208	49
Measles	212	6
Whooping cough	62	4
Diphtheria	17	6
Mumps	26	—
Plague	31	23
Chickenpox	909	6

One hundred and thirty-five plague contacts and 499 smallpox contacts were kept under observation. No one of the plague contacts developed the disease, but 14 out of the smallpox contacts developed smallpox.

REPORT ON OUTSTATION HOSPITALS.

Of the provincial hospitals those of Kandy and Galle are the largest and most important.

Kandy Hospital.—There are 333 beds and the medical staff consists of a Superintendent, Physician, Surgeon, Ophthalmic Surgeon, and 4 House Officers. The hospital is a nurses' training school and 79 pupils were under training during the year.

There were 7,995 admissions in 1932, as compared with 9,275 in 1930. Of these 6,995 were cured and discharged, 576 died; the corresponding figures for 1931 were 7,997 and 576 respectively. The daily average sick in hospital was 306.91, as against 348.77 in 1931; the percentage of deaths to total treated was 6.9, as against 6.5 in 1931.

The following table gives the principal diseases treated and the number of deaths:—

	Admission.	Deaths.
Enteric fever	189	39
Malaria	706	13
Dysentery	102	14
Influenza	253	4
Pulmonary tuberculosis	154	40
Leprosy	23	—
Ankylostomiasis	465	45
Pneumonia	96	33
Eye diseases	919	2

There were 448 operations performed, 374 major and 74 minor with 34 and 3 deaths respectively.

The Eye Institute has become very popular and the Eye Surgeon is kept fully occupied till 2 or 3 P.M. every day. Two wards are allotted for eye cases and are always overcrowded. The number of eye operations performed was 1,242 of which 361 were major operations and 881 minor operations.

Galle Hospital.—This hospital is situated in Mahamodara, a suburb of Galle, and is near the sea. It has at present accommodation for 271 patients.

The staff consists of a Medical Superintendent, Visiting Physician, Visiting Surgeon, Eye Surgeon and 3 House Officers. This hospital is also a training centre for nurses with a European Matron and two Nursing Sisters.

The total number of in-patients treated during the year was 7,355 with a daily average of 242.5. Out of these 466 died giving a percentage of 6.33 deaths.

The following were the chief diseases treated:—Dysentery 89 cases with 13 deaths; pulmonary tuberculosis 150 cases with 28 deaths; enteric fever 279 cases with 54 deaths; malaria fever 597 cases with 16 deaths; ankylostomiasis 334 cases with 10 deaths. There were 647 surgical operations performed during 1932.

In the casualty room 589 cases were attended to and 1,011 injections were given for parangi and syphilis. In the laboratory 8,321 specimens were examined; of these 291 were blood, 51 malarial parasites, and 565 sputa, &c. In the Eye Institute 7,265 cases (19,692 visits) were treated, and 631 minor and 241 major operations were carried out.

INSTITUTIONS FOR TUBERCULOSIS.

There are four special institutions for tuberculosis in Ceylon. viz., The King Edward VII. Anti-Tuberculosis Institute, Colombo, the Ragama Hospital, the King Edward VII. Sanatorium at Kandana, and the King Edward VII. Sanatorium at Kankesanturai for early cases.

The Institute in Colombo and the two Sanatoria were built and equipped from the King Edward VII. Memorial Anti-Tuberculosis Fund, but are maintained by Government.

The Institute is situated in a central part of Colombo and in addition to the usual clinic rooms has X'ray apparatus, a laboratory and artificial sunlight apparatus, and serves as a centre for expert diagnosis and treatment. There are no beds at the Institute but patients requiring indoor treatment are sent to Kandana or Ragama as accommodation permits. The nurses make a number of visits to patients' homes and are expected to arrange for contacts to attend at the Institute for medical examination. The X'ray installation was unfortunately out of order during the year. 2,518 out-patients who paid 5,331 visits were treated at the Institute.

In order to popularize the Institute patients suffering from lung conditions other than tuberculosis were treated and nearly half the attendances were by such patients. Now however that the Institute is well established, an attempt is being made to restrict the work principally to tuberculosis.

The hospital for tuberculosis at Ragama is 12 miles away from Colombo and is easily accessible by rail and road. It contains 349 beds and is intended for the treatment of advanced or moderately advanced cases of pulmonary tuberculosis.

The following are the statistics for the year:—

The number of patients remaining at the end of 1931 was 288 and the number admitted during 1932 was 886. There were 298 deaths (of which 33 died within two weeks of admission) showing a percentage of 25.4 to the total number treated. 553 patients were discharged of whom 38 left hospital relieved within 2 weeks, 40 were transferred to Kandana Sanatorium and 63 left cured. The number remaining in hospital on December 31, 1932, was 323, which includes 32 patients remaining for over one year. The daily average number of patients in the hospital was 310.85.

Usually the cases admitted are in the 3rd stage of the disease (according to Terban Gerhardt's classification) and only rarely are 2nd stage patients seen. The average case shows bilateral involvement below the 4th rib, frequently with localized excavations.

Treatment is based on—

(1) Rest cure.
(2) Graduated exercises.
(3) Symptomatic treatment.
(4) (*a*) Artificial pneumothorax.
  (*b*) Artificial light.
  (*c*) Gold preparations.
(5) Education.

The staff is gradually being trained to maintain discipline among the patients with regard to *rest and graduated exercises*. The patients are given regular talks about the benefit of these methods of treatment. Besides walks, patients have regular breathing exercises and odd jobs in the wards and gardening.

Twenty-one patients received artificial pneumothorax treatment. Four died, three are still in hospital, 10 left hospital much improved and in four disease became arrested. Eleven patients received gold treatment in the form of Solganal and Solganal B. In 6 cases disease was arrested, 2 improved, 2 became worse and 1 died. Those requiring artificial light treatment are sent to the General Hospital, Colombo.

Symptomatic treatment forms a large part of the work. Only about 20 per cent. of the patients are fit for outdoor exercises, the remaining 80 per cent. being on absolute rest or the 1st and 2nd stages of graduated labour.

Patients are given regular talks on :—

(1) How to avoid spreading tuberculosis.
(2) How to avoid getting it.
(3) How to preserve children from it.
(4) The earliest suspicious signs.
(5) When you go home from hospital.

The water supply was hopelessly inadequate; the patients were unable to have regular baths; the shower baths could not be used; the dhoby was very greatly handicapped and the quality of water was much below standard. Funds for an improved water supply have been voted and a scheme has been undertaken. New mains are being laid and new wells are under construction. Electric lights have been installed.

General Hospital, Tuberculosis Wards.—The number of patients treated during the year was 1,029 and there were 52 deaths. These wards may be considered at present as an annexe of the Ragama Tuberculosis Hospital. They are generally crowded with advanced cases of pulmonary tuberculosis, the majority of whom remain in the hospital till they die. The position is an unsatisfactory one as the cases are not under the care of a staff specially trained in tuberculosis work and the wards were not built or equipped as tuberculosis wards. They are a makeshift till proper accommodation is available for the large number of chronic cases who are unable to get accommodation at the Ragama Hospital. The treatment of these cases is mainly symptomatic.

The King Edward VII. Sanatorium at Kandana is 14 miles from Colombo and has accommodation for 72 patients.

The number of patients remaining at the end of 1931 was 60 and the number admitted during 1932 was 171 (161 new admissions and 10 readmissions). There was no death. In 125 of the 174 patients discharged the disease was arrested, 17 were much improved, 3 were improved, 2 were not improved, 1 was in the same condition, 11 were sent for observation and 15 were unsuited for Sanatorium treatment. The number remaining in the Sanatorium on December 31, 1932, was 57 and the daily average number of patients was 64.10.

The usual principles of sanatorium regime are applied to patients, viz.:—

(1) Rest—mental and physical,
(2) Graduated exercises,
(3) Routine, discipline, and education,
(4) Correct feeding,

supplemented by such therapeutic measures as are required.

The King Edward VII. Sanatorium at Kankesanturai on the coast of the Northern Province is a new building erected at the expense of the King Edward VII. Memorial Fund. It was opened on January 16, 1932. Accommodation is provided for 44 patients. The cost of building was Rs. 102,575.

The first two patients were admitted on January 20. The total number admitted during the year was 67 (53 males and 14 females). Of the 48 patients discharged during the year 44 were fit to pursue their ordinary vocations. There were no deaths. The number remaining in the Sanatorium on December 31, 1932, was 19.

MEDICAL INSTITUTIONS AIDED BY GOVERNMENT.

The following institutions were aided by Government during the year:—

(1) The Victoria Home for Incurables.
(2) Wiseman Hospital, Welimada.
(3) McLeod Hospital, Inuvil.
(4) Green Hospital, Manipay.
(5) Jevon's Dispensary, Puttur.
(6) The Wesleyan Medical Mission Hospital, Talawa.
(7) The Denepitiya Medical Mission Hospital, Southern Province.

Nos. (1), (4), and (7) are for males and females; Nos. (2), (3), (5), and (6) are for females and children only.

VENEREAL DISEASES CLINICS.

There are three Venereal Diseases Clinics in the town of Colombo, viz., one at the General Hospital (out-patient), one at the Port Surgeon's Office (out-patient), and the third at the Female Branch Hospital with accommodation for both in-patients and out-patients.

Venereal Diseases Clinic, General Hospital, Colombo.—The following table gives comparative figures of the cases treated at the clinic for the past three years:—

Cases.	1930.	1931.	1932.
Syphilis	731	526	447
Soft sores	91	300	394
Gonorrhoea	653	725	749
Yaws	29	26	48
Other dieases	—	—	239

Port Venereal Clinic for Seamen.—The clinic is held in a special room at the Port Surgeon's Office.

Twenty-six persons attended the clinic last year. Twenty-six cases of syphilis were treated and intravenous injections of Neo-Salvarsan were given. Treatment is free.

After injections are given a card is handed to the patient with an entry showing the date of the injection and the dosage and the patient is advised to continue treatment at the next port of call.

Most of the cases are diagnosed by clinical examination only, since there is usually insufficient time to arrange for serological or bacteriological examination at the Bacteriological Institute.

Venereal Diseases Clinic at the Female Branch Hospital.—The cases treated in the clinic for the past three years were as follows:—

Cases.	1930.	1931.	1932.
Syphilis	366	236	223
Gonorrhoea	469	262	457
Yaws	12	1	7
Other diseases	49	—	3
	896	499	690

The clinic is held on two evenings a week—Tuesdays and Fridays. Most of the cases attending the clinic are married women and many of them are cases of chronic gonorrhoeal infection. The existence of the clinic is well known among the hospital class of patients, who have no objection to injections or any line of treatment and who are on the whole very appreciative and willing to carry out instructions.

Venereal Diseases Clinic at the Kandy Dispensary.—This is a new clinic which was opened on October 2, 1931, and is held on two evenings a week—Mondays and Saturdays. The cases treated during the year were as follows:—

	Cases.
Syphilis	161
Gonorrhoea	289
Gonorrhoea and syphilis	23
Yaws	26
Skin diseases	52

Besides the particulars given in respect of the four clinics, 6,537 in-patients (with 79 deaths) in the various hospitals and 21,823 out-patients at dispensaries and out-patients' department of hospitals in the Island were treated for venereal diseases during the year, as against 6,058, 85, 21,080, respectively, in 1931.

Hospital Returns, &c.—Charts and returns of hospitals will be found at the end of this Report.

VII.—PRISONS AND ASYLUMS.

PRISONS.

During the year 1931, eleven prisons were maintained by Government in the following places:—Central Prisons at Welikada (Colombo), Bogambara (Kandy), Mahara (14 miles east of Colombo), and Jaffna; local prisons at Anuradhapura, Badulla, Batticaloa, Galle, and Negombo; remand prisons at Hulftsdorp (Colombo) and Kandy (old prison).

On December 31, 1931, there were in all the prisons a total of 3,487 convicted prisoners (3,425 males and 62 females). During the year under review 13,789 males and 417 females were admitted and 13,427 males and 431 females were discharged. 159 male and 1 female prisoner died. On December 31, 1932, 3,817 male and 57 female convicted prisoners remained in all the prisons.

The number of hospitals exclusively maintained for prisoners remained unchanged. The following are the ten hospitals so maintained:—

	Beds.
The Prison Hospital, Welikada	180
Female Jail Hospital, Welikada	12
The Mahara Prison Hospital	53
The Negombo Prison Hospital	16
The Bogambara (Kandy) Prison Hospital	35
The Jaffna Prison Hospital	12
The Galle Prison Hospital	12
The Anuradhapura Prison Hospital	12
The Badulla Prison Hospital	4
The Batticaloa Prison Hospital	5
	341

On the whole the health of the prisoners in all prisons was satisfactory. In Jaffna Prison, 144 cases of dysentery occurred during the first half of the year, and several sanitary improvements were made during the year with a view to preventing outbreaks of dysentery. At Welikada there were 763 cases of dysentery (amoebic 41, bacillary 476, unidentified types 246). The routine laboratory examination of all dysentery patients has made it possible to treat bacillary cases with serum and amoebic cases with emetine. Of the latter drug 965 injections were given. The results of treatment have, therefore, been more satisfactory than in the past. There were 298 cases of chickenpox which broke out in June when two prisoners who were under treatment at the Eye Hospital developed the disease within a few days of their discharge from that institution. The disease spread widely owing to the impossibility of satisfactorily isolating the contacts within the Jail. Thirty-eight cases of mumps, 10 cases (4 from Mahara) of typhoid fever, and 8 cases of measles occurred. At Mahara Prison there were 77 cases of dysentery, 33 cases of malaria, and 26 cases of influenza. Besides there were 7 cases of chickenpox, 5 cases of mumps, and 4 cases of typhoid fever. At Kandy there was an outbreak of dysentery (203 cases) of a bacillary type, probably due to the long drought. At Galle there was very little sickness and at Anuradhapura malaria fever and dysentery were the chief diseases.

Anti-typhoid inoculations were given at Welikada and Mahara Prisons, but not so freely as before owing to the outbreaks of dysentery and chickenpox.

All new admissions to the Mahara Jail, 713 cases in all, and 121 prisoners in Batticaloa Jail were given treatment for ankylostomiasis during the year.

The sanitary condition of the prisoners was generally good. At Mahara Prison, the new building programme, which will result in an improvement in the sanitary condition of that prison, is well under way. During the year six new wards were completed, two are nearing completion and work on three more has not yet begun. The conditions that prevail at Hulftsdorp Remand Jail are still very unsatisfactory, chiefly because of overcrowding and unsatisfactory buildings, but the congestion was relieved to some extent by a certain number of remand prisoners being housed at Welikada.

The Medical Officer of Galle Prison complains of continuous overcrowding in the prison.

The following is a brief statement concerning each prison:—

Name of Prison.	Daily Average in Prison.	Daily Average Sick in Hospital.	Total Number of In-Patients treated.	Total Number of Out-Patients treated.	Total Number of Deaths.	Death Rate Per Cent. of In-patients in Hospital.	Chief Diseases treated (formeaning of Figures, please see Key below).
Prison Hospital, Welikada	1,405·29	97·81	2,009	46,962	48	2·44	1, 3, 4, 5, 6, 9, 11, 12, 13, 14, and 16
Mahara	915·29	7·11	224	13,181	5	2·22	1, 3, 5, 9 11, 12. and 16
Bogambara	518·95	25·36	1,044	15,193	8	·93	1, 2, 3, 5, 8, 10, 12, 15, and 16
Jaffna	360·83	11·87	548	2,596	3	·54	1, 3, and 16
Negombo	98·09	11·91	180	3,956	24	12·82	1, 2, 3, 9, and 16
Galle	123·67	2·45	132	2,748	1	·75	1, 5, and 7
Anuradhapura	139·12	5·11	242	635	2	.83	1 and 3
Badulla	72·92	·73	46	385	—	—	1 and 3
Batticaloa	61·41	1·54	69	—	—	—	1, 2, and 3
	3,695·57	163.89	4,494	85,656	91	2·28	

* Key referred to.

1. Malaria
2. Diarrhoea
3. Dysentery
4. Eye diseases
5. Influenza
6. Pneumonia
7. Enteritis
8. Conjunctivitis
9. Chickenpox
10. Skin diseases
11. Enteric
12. Mumps
13. Abscess
14. Pulmonarytuberculosis
15. Rheumatism
16. Other diseases

ASYLUMS.

(a) The Lunatic Asylum, Angoda.

The Government Lunatic Asylum is situated at Angoda, about 6 miles from Colombo and was built to accommodate 1,830 patients.

During 1932 the average daily number of patients was 2,426, the largest number on any one day being 2,582 and the lowest number 2,318.

The main buildings consist of six three-storey blocks containing altogether eighteen large wards each designed to hold 96 persons. There is also a block of 102 cells in which noisy patients can be locked up. There are no paying wards for better class patients and no facilities for modern treatment. In 1931 two temporary wards to accommodate 300 quiet male patients were added.

Uncertified persons sent by the courts for medical observation to determine their mental state are placed in the same wards as certified patients and although it is the custom to speak of the " House of Observation " the term refers not to a building but to the legal status of such uncertified persons while they are in the Asylum.

Attention was drawn in the 1930 report to the serious overcrowding. From 1926 to 1931 the number of inmates of the Asylum had been increasing by nearly 200 a year so that a state of overcrowding had developed which was getting progressively worse. As a result the death rate from diseases such as dysentery and tuberculosis had become alarmingly high and it was essential to mitigate to some extent the unsatisfactory conditions under which the patients—in particular, the male patients—were living.

As a result of the measures taken in 1931 to lessen the overcrowding the number of deaths has been considerably reduced. There were 217 deaths in 1932 compared with 370 in 1931 and 315 in 1930.

The statistics for 1931 and 1932 are as follows :—

Asylum—

	1931.			1932.		
	Males.	Females.	Total.	Males.	Females.	Total.
Remaining at beginning of the year	1,588	837	2,425	1,379	767	2,146
Admitted	595	270	865	705	303	1,008
Total treated	2,183	1,107	3,290	2,084	1,070	3,154
Discharged	597	177	774	403	201	604
Died	207	163	370	121	96	217
Remaining at end of the year	1,379	767	2,146	1,560	773	2,333

House of Observation—

	1931.			1932.		
	Males.	Females.	Total.	Males.	Females.	Total.
Remaining at beginning of the year	78	45	123	102	77	179
Admitted	1,141	538	1,679	1,265	545	1,810
Total treated	1,219	583	1,802	1,367	622	1,989
Transferred to Asylum	517	222	739	674	277	951
Discharged	572	258	830	512	225	737
Died	28	26	54	27	22	49
Remaining at end of the year	102	77	179	154	98	252

Court.—A court for the disposal of lunacy cases was established at the Asylum on January 16, 1930, and sits every Thursday. It has been a great benefit and convenience to the patients and to the staff and has resulted in a saving of Government money.

Infectious Diseases.—The following table shows the number of cases of infectious diseases occurring during 1931 and 1932:—

	Inmates.		Attendants.	
	1931.	1932.	1931.	1932.
Dysentery ..	410 ..	465 ..	13 ..	2
Chickenpox ..	151	30 ..	16 ..	—
Pulmonary tuberculosis ..	108 ..	177 ..	— ..	—
Influenza	126 ..	125 ..	25 ..	6
Erysipelas ..	— ..	1 ..	— ..	—
Enteric fever ..	8 ..	6 ..	1 ..	—
Leprosy	— ..	2 ..	— ..	—
Parangi	4 ..	1 ..	— ..	—

Dysentery and Pulmonary Tuberculosis.—Of the 266 deaths which occurred in the Asylum, 119 were due to dysentery, and 53 to pulmonary tuberculosis. The prevalence of these two diseases must be attributed in no small measure to the state of overcrowding. There was an epidemic of dysentery during the early part of the year.

Accidents.—The number of cases of injury to patients by themselves was 116, by other patients 113, and by attendants 2. The three attendants who were involved in the latter two cases have been dismissed.

Restraint and Seclusion.—There have been no cases of restraint and seclusion during the year under review.

Occupation and Amusements.—The male patients were employed mostly in industrial and agricultural work and in maintaining the Asylum grounds in good order. The female patients made uniforms for the staff and other articles for Asylum use.

Games and sports were carried on as usual. There are three tennis and two volley ball courts and a cricket ground which were largely used by the patients and attendants.

Newspapers.—Newspapers and magazines were supplied by Government for the staff and inmates.

Laboratory.—A laboratory which has been a long felt want was started in February, 1930. With the present equipment it is only possible to do the simple laboratory examinations of blood, sputum, faeces, and urine.

(*b*) LEPER ASYLUMS.

There are two Leper Asylums in the Island, one at Hendala, 7 miles from Colombo, and the other on the Island of Mantivu, 3 miles from Batticaloa in the Eastern Province.

Hendala Leper Asylum.—The following is an extract from Dr. Vanderstarten's "Brief Sketch of the Medical History of Ceylon":—"The Leper Asylum at Hendala is perhaps the only monument of the Medical History of Ceylon during the Dutch period which is left to us. There is no authenticated record of its foundation, beyond an inscription on a Stone 'Anno, 1708', and a monogram scarcely decipherable, indicative perhaps of the date of the building and of the original owner of the property on which the institution stands. It is generally believed on traditional authority that it owes its foundation to a philianthropic Dutch lady, daughter of a Dutch Governor, who was herself a leper and at her death left the property to Government in trust for the pauper lepers of the Colony. In a memorandum made by Governor Van Imhoff in 1740, he commends this institution to the charge of his successor. Although frequent search has been made among the archives of the Government Record Office, nothing has come to light to show how the Government became possessed of a property 16 acres in extent occupying one of the most beautiful sites in the neighbourhood of Colombo at the mouth of the Kelani River, admirably adopted from its situation, isolation and distance from town for the segregation and treatment of lepers.

We find a reference to this building in Valentyn, (Ceylon P. 350). Heer Simons in the memorandum to his successor Heer Bekker dated December 16, 1707, says—Work has been carried out for a long time at the Leper House, and the funds were granted by their Excellencies on October 29, 1704, but it progresses very slowly.

The same Governor in his instructions, &c., for the Dissawa of Colombo dated January 28, 1707, says—Each village must also retain and support its plague of leprosy without it being allowed the use of the public ways, for which the headmen were responsible."

The Asylum must be one of the oldest functioning institutions for the treatment of leprosy if this account is correct. The majority of the present buildings are of more recent date than the office.

The staff consists of a Medical Superintendent, 2 Assistant Medical Officers, 2 Apothecaries, a Steward-Clerk, a Mother Superior and 12 Religious Sisters, 2 overseers, 1 instructor of games, 46 male attendants, 9 female attendants, an office peon, a gatekeeper, a dhoby, 4 cooks, and 40 labourers.

The statistics of the hospital are given below:—

	Mixed Races.		Indians.		Total.
	Males.	Females.	Males.	Females.	
Remaining on December 31, 1931	419	109	59	12	599
Admitted during 1932	150	18	47	6	221
Discharged during 1932	87	12	44	7	150
Died during 1932	47	13	—	4	64
Remaining on December 31, 1932	435	102	62	7	606

Of the 221 admissions, 155 were new cases, and 66 were re-admissions. Amongst the new admissions, 109 were Ceylonese and 46 were Indian immigrants. The admissions during the year represented the following types:—

N^1—39
N^2—68
N^1 C^1—29
N^2 C^2—23
N^1 C^2—36
N^2 C^1—16
N^2 C^3— 2
N^3 — 3
N^1 C^3— 2
C^2— 3
221

The new admissions were from the following provinces:—

	Ceylonese.		Indians.		Total.		Grand Total.
	M.	F.	M.	F.	M.	F.	
Western	52	8	22	—	74	8	82
Southern	24	6	1	—	25	6	31
Sabaragamuwa	7	1	7	—	14	1	15
Central	1	1	15	3	16	4	20
Northern	1	—	—	2	1	2	3
North-Western	1	—	—	1	1	1	2
North-Central	1	—	—	—	1	—	1
Eastern	—	—	—	—	—	—	—
Uva	1	—	—	—	1	—	1
	88	16	45	6	133	22	155

From the above admissions it will be seen that about 70 per cent. were Ceylonese and 30 per cent. Indian immigrants.

Of the 150 patients discharged, 70 were discharged as non-infective after 3 consecutive bacteriological examinations, 24 were repatriated to India, 20 were transferred to Mantivu Asylum, 22 absconded, and 14 overstayed leave.

Deaths.—The number of deaths during the year was 64-47 males and 17 females. The percentage of deaths to total treated was 10.5.

The School.—The school was established in 1920. The number on the roll is 84 with an average attendance of 45. English is taught up to the 5th Standard, Tamil to the 4th, and Sinhalese to the 6th. During the year the school was examined by the Government Inspector of Schools who reported favourably on its work. Prizes kindly donated by the Director of Education were given to successful students.

On January 27, 1931, a scout troop was inaugurated by the Chief Scout Commissioner for Ceylon for the boy-patients at the Asylum. More than 20 boys entered the troop, scout uniforms were provided and every encouragement was given them by the staff. The troop has been very successful; the regular out-door exercises, the games and occupations have given the boys new interests and greatly improved their health. In November the Mantivu Scout Troop paid a visit to the Hendala Asylum where they camped for a fortnight and were entertained by the Hendala Troop.

A plot of ground is planted with vegetables by the scouts, and this gives them occupation during their spare hours. The association has its own funds, and each scout is in possession of a Savings Bank Book, and deposits part of his earnings, which he obtains by doing odd jobs, so that he is taught to be thrifty.

The General Condition of the Patients.—Special attention is given to exercise and good food, which are two of the most important adjuncts to treatment. Patients are encouraged to do some manual work. There are fitters, carpenters, masons, tailors, and shoemakers. Some patients make ornamental flower pots out of cement and sand; most of these pots are sold and the patients derive some pecuniary benefit. Patients trained as barbers work among the patients and receive a small sum from the Government for work done for the Asylum. There are some who do vegetable gardening and others occupy their time in flower gardening. However, the patients who work are only a minority when compared with the large number who lead a more or less lazy life.

Special Treatment of Leprosy.—During 1932 Hydnocarpus oil was used with 4 per cent. double distilled creosote as an injection. Injections were given intramuscularly, subcutaneously, and intra-dermally twice a week. The initial dose was ½cc. increasing to a maximum of 5cc.

The general reaction with this drug was practically nil, but the local reaction of pain and irritation continued in some cases for a few days. Massage and hot fomentation allayed the local reaction. Abscesses followed injection in 10 cases, and had to be lanced. The after effects of the drug are manifested by a loss of appetite for a day or two. Of the 606 inmates, 309 males and 90 females received injections in 1932. Treatment was not compulsory. Only those who volunteered received treatment. Number of days on which injections were given was 75.

Chaulmoogra oil was orally administered to 360 patients. It was given in milk or in gelatine capsules in doses of 5 to 30 minims.

The following table shows the progress of treatment:—

Injections.	Patients.	Marked Improvement.	Slight Improvement.	No Improvement.
Males over 50	13	7	4	2
25 to 50	91	30	49	12
1 to 24	205	9	61	135
Females over 50	4	3	1	—
25 to 50	25	15	4	6
1 to 24	61	10	40	11
Total	399	74	159	166

There was an increase over the previous year in the number of those who took injections. Patients realized the value of this treatment, and it was a hopeful sign. The results were encouraging and should have been better if most of those admitted were not advanced cases.

Seventy-one were discharged on parole, as non-infective after having been examined bacteriologically thrice at intervals of a month with negative results. Twenty-seven discharged cases returned with fresh outbreak of ulcers, and 7 of these were found to be bacteriologically positive. Out of the 27 returned, 4 were discharged in 1930, 9 in 1931, and 14 in 1932.

The type of cases remaining are as follows:—

	N1.	N2.	N3.	C1.	C2.	C3.
Males ..	28	204	32	52	149	28
Females ..	6	52	7	5	33	10
Total ..	34	256	39	57	182	38

Mantivu Leper Asylum.—The institution which has been in existence only ten years is situated on an Island of about 160 acres, in a large lagoon near Batticaloa. Male patients are housed in twenty-four two-roomed cottages each with its own kitchen, and in a number of hospital wards. The female patients all live under hospital conditions in wards. There is accommodation for 176 patients. Although it was originally intended that the institution should be conducted as a leper colony, a large staff of attendants, garden coolies, &c., is maintained but the Medical Officer-in-Charge is encouraging the patients to engage in useful work and to become to some extent self-supporting.

At the end of 1931 there were 177 lepers (138 males and 39 females) remaining in the Asylum. There were 68 admissions (56 males and 12 females) during 1932, and 16 cases (16 males) were discharged. There were 27 deaths (22 males and 5 females) and the percentage of deaths to total treated was 11.02.

Treatment.—All the patients except 20 received treament with E. C. C. O. injections and chaulmoogra oil by the mouth and about 2 per cent. of those who underwent this form of treatment showed definite improvement.

Boy Scout Movement.—During June 12 Boy Scouts went to Hendala for a camp. The boys are actively engaged in agriculture and they reaped a harvest of 22 bushels paddy, 400 bushels of green peas and supplied half the quantity of betel leaves required at the Asylum. The Chairman of the Rural Education District Committee has kindly donated the whole weaving materials of a weaving school and weaving will start at an early date.

VIII.—METEOROLOGY.

The following report was prepared by the Superintendent, Colombo Observatory:—

Rainfall.—The chief features of the year 1932 were the widespread deficits during January and the first half of February; absence of well-developed thunderstorm activity during March and April; a weak south-west monsoon; and heavy rain in the north of the Island in November largely due to the influence of two depressional storms that formed in the Bay of Bengal during the month.

The rainfall totals for the year were below average, except in the north and west of the Island. St. Martin's estate, with a total of 56 inches below its average, recorded the largest deficit. The highest rainfall total in 1932 was 214.25 inches at Hiniduma. Ingoya came next with 210.36, while other amounts over 200 inches were Watawala 209.00, Kuruwita 205.85, and Theydon Bois estate 205.08. The highest averages (10 years and over) were Carney estate 231.65, and Blackwater estate 230.51 inches. The lowest totals for the year were Yala 23.84, Migahajandura 26.82, and Kudawewa 27.72 inches, while the lowest averages (10 years and over) were Marichchukkaddi 35.32, Ponparippu 38.61, and Mannar 38.93 inches.

Temperature.—The low-country stations with the highest and lowest mean shade temperatures for 1932 were Trincomalee with 81.5°F. and Galle with 97.7°F, The figures for Colombo and Kandy were 80.3°F. and 76.2°F., respectively, while Nuwara Eliya at an elevation of 6,000 feet, had a mean shade temperature of 59.0°F. The highest shade temperature recorded during the year was 97.7°F. at Batticaloa, on June 13 and July 16, while the highest on record is 103.7°F. at Trincomalee, on May 12, 1890. The lowest this year at low-country stations was 59.9°F. at Anuradhapura, on February 5, while 29.1°F. was recorded on February 11, at Nuwara Eliya, at which station 27.1°F. was recorded in 1914. The highest shade temperature in Colombo in 1932 was 94.0°F. on January 25, and the lowest 61.7°F. on February 5. The mean daily range for

1932 (the difference between the mean of the maximum and the mean of the minimum) was highest at Badulla and Nuwara Eliya, 17.5°F. and lowest at Galle 8.8°F. At Colombo and Kandy it was 11.1°F. and 14.8°F., respectively. The absolute range for the year (the difference between the highest and the lowest readings actually recorded at any one station) was greatest at Nuwara Eliya, 46.3°F., and lowest at Galle, 22.4°F.

Colombo.

	Sunshine.	Temperature.				Rainfall.	Degree of Humidity		Winds.		
	Mean Solar Radiation.	Mean Minimum on Grass	Mean Shade Maximum.	Mean Shade Minimum.	Mean Temperature	Amount in inches.	Mean of Maximum and Minimum.	Mean of 9.30 A.M. and 3.30 P.M.	General Direction A.M.	General Direction P.M.	Average Force
	°	°	°	°	°						Miles.
January	154·9	67·8	89·0	71·7	80·4	0·00	68	64	NE	N	167
February	147·0	65·8	85·8	69·9	77·8	3·59	78	71	Variable	WNW	107
March	149·1	70·7	88·2	73·7	81·0	2·60	78	70	Variable	W	106
April	140·8	73·9	87·2	76·3	81·8	11·27	82	76	SW	WSW	117
May	141·8	74·7	85·9	76·3	81·1	28·98	84	80	SW	SW	160
June	146·4	75·8	85·4	78·3	81·8	1·68	82	79	SW	SW	170
July	144·0	74·3	85·2	76·9	81·0	1·56	81	77	SW	WSW	147
August	145·3	74·2	84·8	75·8	80·3	15·99	83	79	SW	SW	148
September	148·4	74·4	84·8	76·6	80·7	7·16	80	78	SW	SW	170
October	146·7	74·0	84·3	75·3	79·8	30·74	84	82	WSW	WSW	116
November	147·7	72·6	84·0	73·9	79·0	14·60	84	80	Variable	W	105
December	152·2	69·0	85·4	71·7	78·6	5·73	80	74	NE	NW	115
Year	147·0	72·3	85·8	74·7	80·3	123·90	80	76	—	—	136

Nuwara Eliya.

January	—	43·3	66·0	45·3	55·6	1·08	82	76	—	—	—
February	—	36·3	70·4	39·9	55·2	3·35	74	56	—	—	—
March	—	42·2	70·1	45·2	57·6	1·85	78	65	—	—	—
April	—	43·9	71·3	48·0	59·6	2·72	82	68	—	—	—
May	—	52·7	67·3	53·8	60·6	10·86	88	84	—	—	—
June	—	53·1	66·8	54·4	60·6	6·66	86	83	—	—	—
July	—	53·1	65·0	54·4	59·7	8·93	86	85	—	—	—
August	—	51·2	68·1	54·4	61·2	6·50	86	83	—	—	—
September	—	51·3	66·3	54·5	60·4	5·15	84	79	—	—	—
October	—	52·0	67·1	54·0	60·6	12·77	86	83	—	—	—
November	—	50·6	67·0	52·8	59·9	8·11	84	80	—	—	—
December	—	43·5	67·5	46·5	57·0	3·29	82	70	—	—	—
Year	—	47·8	67·7	50·3	59·0	71·27	83	76	—	—	—

IX.—SCIENTIFIC.

(1) BACTERIOLOGICAL INSTITUTE.

The examinations carried out at the Bacteriological Institute for the year were—

Nature of Specimens.	Official.	Private.	Total.	Positive.	Negative.
Blood for examination for typhoid	3,157	25	3,182	1,122	2,060
Blood for examination for paratyphoid A	1,671	13	1,684	31	1,653
Blood for examination for paratyphoid B	1,673	11	1,684	4	1,680
Blood for examination for Wassermann test	6,175	174	6,349	—	—
Blood for examination for malarial parasites	69	17	86	15	71
Human material for *B. pestis*	55	—	55	21	34
Rats for examination for *B. pestis*	381	—	381	28	353
Sputa for tubercle bacilli	563	17	580	91	489
Sputa for pneumococci	9	—	9	4	5
Urine for bacteriological examination	328	2	330	—	—
Urine for chemical examination	31	8	39	—	—
Secretions for gonococci	73	12	85	29	56
Secretions for diphtheria bacilli	175	15	190	57	133
Faeces for *B. dysenteriae*	2,654	2	2,656	517	2,139
Faeces for *E. histolytica*	2,671	23	2,694	—	—
Faeces for ova of intestinal parasites	10	7	17	10	7
Secretions for *B. Leprae*	641	4	645	321	324
Evacuations for cholera vibrio	38*	—	38	33*	5
Scrapings for spirochaetes	23	3	26	6	20
Faeces and urine for *B. typhosus*	10	6	16	1	15
Miscellaneous specimens	482	8	490	—	—
Water for bacteriological examination	68	22	90	—	—
	20,957	369	21,326		

* 33 are cholera cultures from Mandapam Camp.

The doses of vaccines prepared and issued were—

Nature of Vaccine.	Official.	Private.	Total.
Autogenous vaccines	123	13	136
T. A. B. vaccines (doses)	23,765	193	23,958
Gonococcal vaccines (doses)	5,347	48	5,395
Staphylococcal vaccines (doses)	188	10	198
B. coli vaccines (doses)	112	—	112
Cholera vaccines (doses)	—	12	12
Plague vaccines (doses)	530	—	530
Pneumococcal vaccine (doses)	—	10	10
Total	30,065	286	30,351

The following table shows the specimens of faeces received from four institutions for the examination for *E. histolytica* and *B. dysenteriae*:—

Name of Institution.	No. of Specimens.	*E. histolytica.*	*B. dysenteriae.*	Mucus.	Blood and Mucus.	Giardia Flagellates, &c.	Percentage in which *E. histolytica* or *B. dysenteriae* were found when Blood and Mucus present.
General Hospital	271	18	26	177	108	28	40.7
Mahara Jail, Ragama	170	4	58	138	102	10	60.7
Prison Hospital, Colombo	796	10	123	504	280	39	47.5
Lunatic Asylum, Angoda	645	42	96	523	400	65	34.5
Total	1,882	74	303	1,342	890	142	

(2) PASTEUR INSTITUTE.

The number of persons who received preventive inoculation and treatment of the wound was 1,041; this is an increase of 277 on the number for 1931, but it is the lowest for 6 years prior to 1931.

The number of brains from dogs and other animals examined during the year was 274; this is an increase of 54 on the number for 1931.

Table I. gives the provinces from which the persons came who received treatment:—

TABLE I.

Western Province	667
Central Province	103
Southern Province	94
Northern Province	102
North-Western Province	41
North-Central Province	3
Province of Uva	14
Province of Sabaragamuwa	17
	1,041

Table II. gives the provinces from which the dogs' heads were received with the results of examination:—

TABLE II.

Province.	Positive.	Negative.	Unfit.	Total.
Western Province	124	46	13	183
Central Province	16	22	3	41
Southern Province	10	2	4	16
Northern Province	—	—	8	8
North-Western Province	10	3	5	18
North-Central Province	—	—	2	2
Province of Uva	2	1	—	3
Province of Sabaragamuwa	1	2	—	3
	163	76	35	274

The statistics of failures of the preventive inoculation against rabies for 1931 are now complete; they are as follows:—

Number of persons treated	764
Number of fatal cases	6
Percentage of failures	0·78

Statistics show that the percentage of failures of Pasteur treatment is much the same for the Ceylon institute as for similar institutes in India, but it is higher than for most European institutes.

A probable explanation of this is supplied by an analysis of the statistics of all patients treated at the Pasteur Institute during the years 1919 to 1931. These statistics are given in the following table:—

Class of Patients.	Number treated.	Deaths from Rabies.	Percentage of failures.
Non-paying patients	6,263	55	0·87
Estate labourers	1,071	12	1·10
Paying patients—			
Sinhalese	298	Nil	—
Tamils	67	Nil	—
Burghers	200	Nil	—
Europeans	402	Nil	—
Others	31	1	—
Government Servants—			
Burghers	237	1	—
Europeans	58	Nil	—
Others	632	6	0.95
Total for all patients	9,259	75	0.82

Most of those classified as " others " under Government Servants are labourers and others of a similar position in life as those in the class of " non-paying patients ".

This table may be summarized as follows:—

(*a*) 9,259 patients have been treated with carbolized anti-rabic vaccine and there have been 75 failures which is .82 per cent.

(*b*) 998 paying patients have been treated with one failure. This failure was a Eurasian child who had been adopted by a Burgher, he was more or less a servant.

(*c*) 460 Europeans have been treated without a failure.

(*d*) 437 Burghers have been treated with one failure. This failure was a child.

The treament is exactly the same for all classes of patients. Therefore it follows that estate labourers and the poorer classes do not respond to the treatment as satisfactorily as the better class patients. In other words as the principle of the treatment is to immunize the patients during the usually long incubation periods there are present some factors in connection with the poorer classes which tend to prevent this immunization.

These factors are:—

(*a*) The standard of living.
(*b*) The general health.
(*c*) Nakedness.

The standard of living of the inhabitants of Europe is higher than among most Asiatic peoples, and may be considered of much the same standard as that of the paying patients attending the Ceylon Pasteur Institute.

The general health of a population may be gauged by its death rate. This is approximately 16 per thousand for Europe and 27 per thousand for Ceylon.

Many of our patients are infected with malaria, infested with hookworms, and they consume a mean diet; all of these take a toll of their responses to immunities; and it is not to be expected that they will respond so favourably to inoculations for immunization to rabies as healthy patients who are well housed and live on a generous diet.

It is well known that persons bitten by rabid dogs on the bare limbs or body are at greater risk than those who have been bitten through clothing. The estate labourers and many of the non-paying patients wear only loin cloths during a great part of the day.

Therefore it is necessary to consider the classes of the patients and the three factors above mentioned when comparing the statistics of Pasteur Institutes situated in different countries.

The statistics for the paying patients shows the efficiency of carbolized vaccine (Semple's method).

No case of paralytic accident or other untoward result has occurred at the Ceylon Pasteur Institute, where more than 10,000 patients have been treated up-to-date.

(3) OUTSTATION LABORATORIES.

The following table gives the number of examinations reported from the laboratories attached to the Victoria Memorial Eye Hospital and the Lying-in Home in Colombo and to outstation Hospitals:—

Name of Institution.	Urine.	Faeces Positive for Hookworm.	Faeces Negative for Hookworm.	Blood Positive for Malaria.	Blood Negative for Malaria.	Other Examinations.	Total.
Victoria Memorial Eye Hospital	1,291	3	1	3	19	2,194	3,511
Lying-in Home	4,682	155	95	13	105	336	5,386
Outstation.							
Anuradhapura	2,477	963	396	695	864	176	5,571
Badulla	4,120	3,302	833	112	314	328	9,009
Batticaloa	1,432	1,212	52	10	26	294	3.026
Galle	5,060	1,752	602	18	33	856	8,321
Jaffna	4,666	2,366	826	204	325	1,281	9,668
Kandy	6,099	1,103	1,266	369	1,257	2,870	12,964
Kurunegala	4,968	2,999	1,833	473	789	5,344	16,406
Ratnapura	1,567	1,315	158	26	145	572	3,783
Mandapam Camp	225	37	35	16	17	32,440	32,770

Mr. Michael, Laboratory Assistant of Mandapam Camp, has continued the investigation work on "cholera carriers" passing through Mandapam Quarantine Camp. He examined specimens from 32,295 persons during the year and isolated vibrios (which agglutinated in high titre with standard anti-cholera serum) from 32 persons. This and the work done in previous years indicate that probably about 100 persons harbouring the *V. cholerae* enter Ceylon every year. Yet Ceylon remains notably free from cholera. It is intended that when the work has been continued for three consecutive years, the results and conclusions drawn from them will be published.

(4) GOVERNMENT VACCINE ESTABLISHMENT.

The number of calves received on hire from the contractor amounted to 576.

During the twelve months 566 calves were used for vaccination and of these 547 were returned to the contractor after the collection of lymph.

The difficulty in obtaining calves of a suitable quality for vaccination still continues and this was acutely experienced during the recent outbreak of smallpox when nearly three times the usual number of animals were required daily.

"Seed lymph" for the vaccination of calves was obtained at intervals from the Lister Institute of Preventive Medicine, London. About half the calves were vaccinated with this seed lymph and the rest of the calves with seed lymph prepared in this establishment. Human vaccination with the lymph pooled from the two sources appears to give better vesiculation than when either of them is used separately.

The glycerinated calf lymph was issued to vaccinators in sealed glass capillary tubes. Where a large number of vaccinations were carried out daily the lymph was issued in collapsible metal tubes of varying capacity.

The total number of tubes of calf lymph issued during the year amounted to 266,433, *i.e.*, sufficient for the vaccination of approximately 799,299 persons. The issue during the twelve months reported on has been 100,437 tubes more than in the previous year. Most of these were issued in December due to a widespread outbreak of smallpox. Of this total 3,743 tubes were sold realizing a sum of Rs. 3,604.50; 36,700 were issued to Mandapam Camp; 21,000 to Tataparai Camp, Tuticorin; 13,419 to the Port Surgeon, Colombo; 1,506 to the Medical Superintendent, General Hospital, Colombo; and 2,750 to the Urban District Council, Moratuwa.

The weekly returns of vaccinators received at this establishment show that a successful case percentage of 98.9 (primary vaccination) was obtained with the lymph issued during the year. The few weekly returns received in the latter half of December show a successful case percentage of 62.5 in secondary vaccination.

An outbreak of smallpox at the end of this year occurred in Colombo in November and spread to many outstations. Sufficient calf lymph for six months' usual supply was in stock at the beginning of December but during this month 120,290 tubes were issued of which 73,980 tubes were used solely for vaccination in connection with this outbreak. This necessitated a great increase in the work at the establishment.

(5) MEDICAL ENTOMOLOGY.

During the year research in connection with malaria, filariasis, plague, and the house and bazaar frequenting flies and their allies has been carried out; and as in the past, several of the field staff have been attached to the malaria campaigns and to some of the health units.

A large amount of work of a more or less routine nature has been done by the field staff attached to the malaria campaigns. This has included systematized checking of the field operations by examination of all Anopheline breeding places under treatment, and determination of the efficiency of these operations; and the frequent examination—for presence of *A. culicifacies* larvae—of all potential breeding places which at present have not been brought under control. In addition, the field staff at the campaign centres have, with one exception, been responsible for the execution of the measures adopted to control the breeding of Anopheline mosquitoes in wells.

The prevention of mosquito breeding in wells is one of the most important and difficult problems presented to the authorities in charge of malaria control operations. Except at Badulla, the necessity of treating wells is imperative, as extensive observations have proved that *A. culicifacies* breeds in them prolifically. At the five stations where such control work is proceeding, there are no less than 2,544 wells. This number appears excessive (average approximately one well to every 3½ habitable buildings) particularly as in two of the stations a pipe-borne water supply has been installed. At the present time, however, there seems little hope of any serious reduction in the number of wells being made, and there is also much opposition to the use of the less costly control measures such as the application of Paris green, kerosene, petrol, &c. In the circumstances it has been necessary to attempt control by means of larvivorous fish. The fish used is *Lebistes reticulatus* ("Millions"); it has been cultivated for several years in Ceylon and has proved more suitable for this purpose than the indigenous species. Its establishment and exploitation, however, require persistent effort; but gradually it adapts itself to the conditions present and becomes increasingly prevalent in the wells. An important obstacle to this work is the presence, in a varying proportion of wells at the different campaign centres, of large carnivorous fish. The system at present adopted consists of the routine examination of each well for mosquito larvae and presence of "Millions" once each month or once every two months. Additional fish (obtained from the local hatcheries) are distributed at the same time to all wells from which they have apparently disappeared. At any given time, therefore, a high proportion of the wells in each centre contains *Lebistes*. The results of this work have been very satisfactory, and in every case a considerable reduction in mosquito breeding in the wells has been effected. For example, at Puttalam where originally 54 per cent. of the wells contained larvae of Anophelines, systematic introduction of the fish has within a few months reduced this figure to about 5 per cent.—and this proportion is being consistently maintained. The continued presence of large carnivorous fish in some of the wells at present retards further reduction. Later, as the larvivorous fish become more definitely established in the wells, it is proposed gradually to lengthen the interval between each distribution of the fish.

Research: (*a*) **Malaria**—(i.) *Night Trapping of Adult Mosquitoes.*—The primary object of this work was to collect data relating to the habits of adult Anophelines, and also, if possible, to obtain large numbers of particular species, notably *A. listoni* and *A. maculatus*, for proposes of dissection. In the past, systematic examination of selected catching stations at the various malaria campaign centres and night collecting in houses, boutiques, &c., had provided relatively few Anophelines other than *A. culicifacies* and *A. subpictus*. Trapping was done in two localities—Badulla, and Akaragama (near Kurunegala)—on sites in the vicinity of known breeding places of *A. listoni* and *A. maculatus;* the investigations at Akaragama, however, are not yet completed.

The traps were composed of mosquito netting and were provided with flaps which could readily be opened and shut. The assistant on duty remained inside the trap and made collections at specified hours (7 P.M., 9 P.M., 11 P.M., 2 A.M., 5 A.M., and 7 A.M.). Later, a careful examination of selected houses, or huts in the immediate vicinity of the trap was also made.

At Badulla during the period September, 1931 to August, 1932, inclusive, the main results were as follows :—

(*a*) Total catch—all mosquitoes: trap 7,310, Anophelines 14.4 per cent. (6) houses 1,485, Anophelines 1.1 per cent.

(*b*) Average catch all mosquitoes per night per month: trap, minimum 13.7 (October), maximum 55.5 (March).

(*c*) Average catch, Anophelines, per night per month: trap, minimum 2.7 (April), maximum 22.6 (January).

(*d*) Prevalence (percentages) of Anophelines (all species together) by hours: trap 7 P.M. 44.8; 9 P.M. 20.2; 11 P.M. 8.1; 2 A.M. 3.2; 5 A.M. 21.2; 7 A.M. 2.5.

(*e*) Sex distribution (percentages) of Anophelines (all species) by hours: trap 7 P.M. ♂ 13.6, ♀ 86.4; 9 P.M. ♂ 13.7. ♀ 86.3; 11 P.M ♂ 15.3, ♀ 84.7; 2 A.M.♂ 2.9, ♀ 97.1; 5 A.M ♂ 20.3 , ♀ 79.7; 7 A.M ♂ 69.2. ♀ 30.8.

The total number of Anophelines collected in the trap during the period was 1,049. The most prevalent species were *A. subpictus* var *vagus* 43.4 per cent., *A. culicifacies* 27.7 per cent. and *A. hyrcanus* 12.9 per cent. Only 65 specimens of *A. listoni* and 16 of *A. maculatus* were obtained. The house collections afforded no specimens of *A. listoni*, and only one specimen of *A. maculatus*.

(ii.) *Badulla Malaria Campaign.*—The campaign at this town (elevation 2,250 ft.) is of an experimental nature, control measures being directed solely against *A. culicifacies*. Previous work indicated that *A. maculatus* and *A. listoni* (minimus) were more abundant, but that the former at least was not seriously implicated in the transmission of malaria. The position in regard to *A. listoni* is more doubtful. Night trapping with human bait over a long period and systematic collecting from selected houses, &c., yielded relatively few examples of this mosquito although at certain times of the year larvae were extremely numerous. No specimens have yet been found infected with malaria parasites. But should this mosquito subsequently be shown to be an active carrier of the disease in Badulla, or should the campaign against *A. culicifacies* fail to reduce malaria it is improbable that control by means of anti-larval measures could be further contemplated. The breeding places of *A. listoni* are wide spread, and include several hundred acres of paddy fields, some miles of irrigation channels, the river, and numerous streams and other situations.

Investigations were continued on much the same lines as last year, a large number of selected dipping stations being kept under observation. The main objects of the investigations were (*a*) to determine the effects of the control measures upon *A. culicifacies* and (*b*) to ascertain whether treatment of the preferential breeding places resulted in invasion, by this mosquito, of other potential breeding places within the area of operations.

The anti-mosquito measures in force are limited to treatment of the river, and oiling or filling of borrow pits and excavations associated with brick and pottery making. Observations on such breeding places were made both within and outside the control area. The results, when compared with those for the same places during the previous year (prior to treatment) and with those for similar situations outside the control zone for the present year, showed that the treatment was very effective:—

	1931/1932 Treated.		1930/1931 Prior to Treatment.		1931/1932 Untreated outside Control Zone.	
	Average Larval Rate per 100 dips.	Minimum and Maximum Larval Rates.	Average Larval Rate per 100 dips.	Minimum and Maximum Larval Rates.	Average Larval Rate per 100 dips.	Minimum and Maximum Larval Rates.
River..	6·3	Nil*—25·3 (Oct.)	16·5	1·0*–72·8 (Aug.).	21·3	Nil*–57·5 (Oct.)
River pools	0·6	Nil–8·7 (Mar.)†	44·6	Nil*–146·7 (Jan.).	31·3	Nil*–72·8 (May)
Borrow pits, &c.	1·1	Nil–8·0 (May)‡	87·5	20.2–140·0 (Spt.).	44·1	19·3–75·3 (May)

* River flooding, November and December.
† Larvae present in March only.
‡ Larvae present in January and May only.

The rates given in the table refer to all Anopheline larvae. *A. culicifacies* larvae were present in the treated portion of the river in October only (larval rate 2.5); they were not found at any time in the river pools or excavations. Beyond the limits of the control zone *A. culicifacies* larvae occurred in the river from June to October (larval rates 0.2 to 5.2), in the river pools from June to October and in March (larval rates 0.1 to 12.7), and in excavations in May, September, December, and January (larval rates 0.2 to 20.0). In the previous year in the portion of the river now under treatment *A. culicifacies* occurred from June to October, the larval rates varying from 0.4 to 14.1.

The results of the examinations of untreated situations within the control area showed that treatment of selective breeding places of *A. culicifacies* had not caused any extension of the breeding habits of this mosquito. The results obtained from rice fields, irrigation channels, streams, swampy areas, wells, and other potential breeding places were similar to those obtained during the previous year when no anti-mosquito measures were in force. In one type of situation only were *A. culicifacies* larvae abundant, namely a series of small pits recently cut for water storage; these were immediately brought under treatment. Elsewhere the larvae of this mosquito were extremely scanty, only 64 out of approximately 12,000 larvae examined being found during the year.

The observations on the breeding places of Anopheline mosquitoes made during the past two years at Badulla have afforded interesting data on variations in the prevalence of the larvae of different species. In the course of this work approximately 52.000 larvae have been examined. Only the three important species—*A. culicifacies*, *A. listoni*, and *A. maculatus* will be considered here:—

> *A. culicifacies.*—The season of greatest larval prevalence is from July to October or November, preceding and extending into the early rains of the north-east monsoon. There is close correlation between the curves for larval prevalence and malaria incidence.
>
> *A. listoni.*—The season of greatest prevalence follows the April rains and covers most of the dry period, extending from June to September or October. A season of increased prevalence also occurs during the period (January to March) between the diminishing rains of the north-east monsoon and the April rains. There is an apparent correlation between the main rise in the curve for larval prevalence and malaria incidence, but none in the case of the subsidiary rise.
>
> *A. maculatus.*—The main breeding season is sharply defined—beginning in December and extending to March, immediately following the heavy rains of the north-east monsoon. There is no correlation whatever between the curves for larval prevalence and malaria incidence.

(iii.) *Kurunegala Malaria Campaign.*—A mosquito survey of this town was carried out from January to May, 1932. The original survey was done in 1924, but in view of the numerous improvements resulting from the campaign a revision was considered necessary.

The survey was performed in the usual manner, every section of the town being searched for potential breeding places of Anophelines, which were examined by Entomological Assistants. Excluding rice fields, irrigation channels and wells, the majority of the situations examined were receiving some form of treatment; systematic distribution of larvivorous fish to wells had not been commenced at the time the survey was performed. A total of 743 potential breeding places of which 493 were wells, were found and examined; Anopheline larvae were present in 31.5 per cent. Nearly 10,000 larvae were collected and identified, the predominant species being *A. listoni* (31.3 per cent. of all larvae found), *A. jamesi* (21.9 per cent.) *A. hyrcanus* (20.6 per cent.) and *A. barbirostris* (13.6 per cent.). *A. culicifacies* larvae were scanty (1.0 per cent.), and were found chiefly in wells, and occasionally in streams, borrow pits, and drains. *A. listoni* was breeding prolifically in wells, and was also prevalent in streams, irrigation channels, trenches, and drains. The results obtained for each of the various situations examined were plotted on large scale maps.

(iv.) *Minneriya Land Development Scheme.*—In June, 1932, a preliminary malaria survey of the area selected for land development in the vicinity of Minneriya village was carried out in conjunction with the Superintendent, Anti-Malaria Campaigns. This area embraces some 4,500 acres and is situated east of Minneriya tank at an elevation of 200-250 ft. The country is thickly wooded with a few scattered villages. The following is a summary of the results obtained from the survey:—

(1) The endemicity of malaria in this district, as indicated by the spleen rates in young resident children was very high. The rates ranged from 60.0 per cent. to 86.6 per cent. From the point of view of malaria this tract of country must be regarded as hyperendemic.

(2) The incidence of malaria in this district increases rapidly at the onset of the north-east monsoon. The annual epidemic period of "fever season" extends from October to March, the months of greatest prevalence being November to February.

(3) All three forms of malaria were found. The benign forms (benign tertian, and quartan) were predominant at the time the survey was made. Parasite rates ranging up to 37.5 per cent. occurred, although the examinations were made during the dry season when malaria was not prevalent.

(4) Adult mosquitoes were not abundant during the survey period, but *A. culicifacies*—the chief carrier of malaria in Ceylon—was found in many of the village houses. Larvae of 10 species of Anopheline mosquitoes were collected, of which the most prevalent were *A. listoni* (*minimus*), *A. barbirostris*, *A. pallidus*, and *A. subpictus*. *A. culicifacies* larvae were most numerous in borrow pits, streams, and wells; *A. listoni* larvae in wells, streams, and irrigation channels. *A. maculatus* was breeding in a boulder-strewn stream in the hilly region east of Minneriya.

Recommendations for malaria prevention and control included measures directed towards the protection and care of the labour force and settlers, the instruction of the latter in the elementary principles of malaria control, the reduction of malaria-carrying mosquitoes, and the execution of irrigation and other constructional works with particular regard to the malaria problem.

(*b*) **Filariasis.**—An investigation, having as its object the determination of the insect carrier of this disease, was carried out at the village of Toppur (near Trincomalee) in the Eastern Province in October, 1932.

Comparatively little research on the epidemiology of filariasis has at present been done in Ceylon. Epidemiological studies were made by Dr. P. H. Bahr (now Manson-Bahr) in 1912-1913, and by Dr. W. C. Sweet (unpublished report to Government) in 1925-1926. The main object of both these investigations was to obtain data relating to the incidence and distribution of the disease; the studies did not include research into its transmission by insects.

Bahr examined the blood of 1,308 persons living in 28 towns and villages in widely different parts of the Island. He considered that only one species of worm, viz.—*Wuchereria* (*Filaria*) *bancrofti*, was represented and that its periodicity was definitely nocturnal in character. He found a capricious distribution of the disease—villages where a high incidence of filariasis was present existing in proximity to villages where the inhabitants were quite free from the disease. Filariasis was rare in the north and centre of Ceylon, but common on the east and south coasts. In general, wherever the microfilaria rate was high, the proportion of cases of elephantiasis ("Galle leg") was also high.

Sweet confined his investigations to the Southern Province. He examined the night blood of 3,371 persons from 35 towns and villages and found 4.8 per cent. infected with microfilariae. The distribution of the disease was irregular, but the heaviest infections (up to 31.4 per cent.) were found in certain villages of the Tangalla District. In Galle town an infection rate of 5.8 per cent. was found. The parasite was considered to be *W. bancrofti.*

The investigations at Toppur included the examination of the night blood of residents, the collection and dissection of mosquitoes, and the examination of all potential breeding places of mosquitoes within a radius of 200-300 yards of the village. The latter is situated at the northern extremity of a large tank (Allai tank), and is inhabited by Moors (population 1931—1,439); it consists of some 300 houses, the majority of which are constructed of wattle and daub with low thatched roofs. The village is very insanitary.

Blood smears (thick) were taken from 9 P.M. onwards. The villagers, however, were very reluctant to submit to examination—particularly at night—and the number of films obtained was considerably less than that desired. The results of these examinations were as follows:—

	No. Examined.	No. with Micro-filariae.	Percentage with Micro-filariae.	No. with Elephantiasis.	Percentage with Elephantiasis.
Adults	128 ..	44 ..	34·4 ..	29 ..	22·7
Children (to 12 years) ..	44 ..	11 ..	25·0 ..	— ..	—

Of the adults, 12 only were females; two showed infections with microfilariae, but none showed any manifestations or gave any history of the disease. The children were all boys; two who showed no blood infection had enlarged glands, and gave a history of filarial fever. Of the men, 35 infected with the worms showed no symptoms and gave no history of the disease; and 36 with evident manifestations of filariasis showed no microfilariae in the peripheral blood. Microfilariae were found in one case only of those persons showing definite elephantiasis.

The total number of adults infected with microfilariae and/or with manifestations of the disease was 80 (62.5 per cent.).

No cases of hydrocele, or elephantiasis of the genital organs, were seen. In the persons examined the extremities only—usually the legs, and less often the arms or hands—were affected.

The most important and interesting result of this series of examinations, however, was in relation to the parasite itself. Careful study of the microfilariae revealed differences in structure from those of *W. bancrofti*, but showed that their characteristics agreed closely with those of *W. malayi*. The latter species was differentiated from *W. bancrofti* by Brug in the Dutch East Indies as recently as 1929. It is now known to be widely distributed throughout the Malay Archipelago, and has lately been found by Iyengar in Travancore.

To determine the natural carrier of the infection, collections of mosquitoes from the village houses and from our tents in the vicinity were made at night and in the early morning. A total of 1,944 mosquitoes were obtained, and of these 1,313 were dissected and examined for microfilariae. Of the latter—which included 24 species—77.0 per cent. were *Mansonioides*, 18.0 per cent. Anophelines, and 11.0 per cent. other species of Culicine mosquitoes. Three species of *Mansonioides* were present viz.—*M. annulifera* (52.4 per cent.), *M. indiana* and *M. uniformis* (taken together 47.6 per cent.). Unfortunately, during the early stages of the work *M. indiana* and *M. uniformis* were not differentiated. *M. uniformis*, however, was much less prevalent than *M. indiana*. Excluding an infection in a specimen of *Culex gelidus*, the single worm in which did not appear to be the larval form of either *W. malayi* or *W. bancrofti*, microfilariae were found only in *Mansonioides*. These were similar in form and structure to those figured by Brug for *W. malayi*. Microfilariae were found in 37 female *Mansonioides* (4.0 per cent.)—in *M. annulifera* 17 (3.5 per cent. of this species) and in *M. indiana* and *M. uniformis* 20 (4.5 per cent.). In a series of dissections made subsequently microfilariae were found in 11.2 per cent. of *M. annuliferus*, and 12 per cent. of *M. indiana*. Infections of the proboscis were found in all three species of *Mansonioides*.

Mosquito breeding places within the area examined were relatively numerous. Larvae of *Mansonioides* were plentiful on the rootlets of *Pistia stratiotes* which was growing abundantly in the irrigation channels, seepage areas, and in the tank. In several places the growth of this plant was so dense that it partially blocked the channels.

While much further research on the epidemiology of this disease is necessary, it would appear that at least two species of human filaria—*W. bancrofti* and *W. malayi*—occur in Ceylon. It is probable that subsequently mixed infections will be found, but that in general *W. bancrofti* will be more prevalent in towns and *W. malayi* in rural areas. The determinations of the type of microfilaria and of the insect carriers present in any given locality is of the first importance in relation to preventive measures. Owing to the remarkable breeding habits of the mosquitoes belonging to the genus *Mansonioides*, the methods adopted for the control of filariasis due to *W. malayi* would be radically different from those directed against *W. bancrofti*. In the former case the essential control measure would be the destruction of the *Pistia* plant, and in the latter the ordinary methods adopted for the reduction of breeding of domestic mosquitoes.

In the course of dissections of Anopheline mosquitoes, caught in animal-baited traps at the village of Akaragama near Kurunegala, for malaria parasites numerous infections with microfilaria have been observed. These worms differ considerably from those found in *Mansonioides* at Toppur and are doubtfully of human origin. Of 1,428 Anopheline mosquitoes dissected, 162 contained microfilariae. The infections were confined to two species, viz. :—*A. hyrcanus* (1,036 specimens, 160 infections), and *A. barbirostris* (12 specimens, 2 infections). The remaining Anopheline mosquitoes examined numbered 380, and included 9 species of which *A. listoni* vel *minimus*, and *A. tessellatus* (147 specimens of each) formed the majority. The microfilariae were most prevalent in *A. hyrcanus* during the months of July to September when 98 specimens (36.6 per cent.) were found infected. Numerous Culicine mosquitoes (934) collected in the trap were also dissected. Representatives of 24 species of these mosquitoes were examined, the most prevalent being *Culex fatigans* (253), *Armigeres obturbans* (159), *C. whitmorei* (108), *C. tritaeniorhynchus* (94), and *C. gelidus* (91). Microfilariae, apparently similar to those found in *A. hyrcanus* and *A. barbirostris*, were observed in three species of the Culicine mosquitoes, viz.—*A. obturbans* (5), *Aëdes* sp. (?) (*near pseudomediofasciatus*) (2), and *Mansonioides uniforms* (1). No infections were found in *C. fatigans*. Cases of elephantiasis have not been observed in this village at present, but later an endeavour will be made to examine the blood of a sample of the inhabitants.

(*c*) **Rat Fleas.**—The identification of rat fleas was commenced in August, 1932, simultaneously with an outbreak of plague at Kurunegala. The fleas were collected from rats trapped in the town by the Medical Officer of Health in charge of control measures, and were forwarded for examination in labelled tubes. Subsequently fleas were also sent in by the Medical Officers of Health at Anuradhapura and Gampola. In the latter town an outbreak of plague occurred in November, and control measures were still in progress at the end of the year.

To facilitate comparison the results of the examinations are given in the form adopted by Hirst in his recent rat-flea survey of Ceylon (Ceylon Journal of Science, III., page 49, 1933).

Kurunegala.—August to November, 1932.

	No. of Premises yielding Rat Fleas.	No. of Rats trapped.	No. of Fleas.	General Flea Index.	No. of *X. astia.*	No. of *X. cheopis.*	Per Cent. *X. cheopis.*	*X. astia* Index.	*X. cheopis.* Index.	Other Fleas.
C*	39	78	525	6·72	271	254	48·3	3·48	3·26	—
R	16	56	252	4·50	175	76	30·2	3·13	1·35	*P. irritans*(1♂)
T	55	134	777	5·80	446	330	42·5	3·33	2·46	1

*C = Commercial premises. R = Residential premises. T = Total premises.

The majority of the fleas examined were collected from rats trapped in the infected part of the town. The *X. cheopis* index varied considerably in different streets, ranging from 1.3 in Dambulla and Negombo roads (where most of the premises were residential in type) to 6.5 in Bazaar street and 10.7 in Esplanade street the centre of the commercial area.

There was no marked inequality in the distribution of the sexes of the fleas examined. The percentage of females of *X. cheopis* was 46.6, and of *X. astia* 50.6, results which agree fairly closely with those given by Hirst.

Gampola.—December, 1932, to February, 1933.

	No. of Premises yielding Rat Fleas.	No. of Rats trapped.	No. of Fleas.	General Flea Index.	No. of *X. astia.*	No. of *X. cheopis.*	Per cent. *X. cheopis.*	*X. astia* Index.	*X. cheopis.* Index.	Othe. Fleas
C	105	642	3,204	4·99	1,249	1,945	60·7	1·95	3·03	10*
R	87	195	860	4·31	277	583	67·8	1·42	2.98	—
T	192	837	4,064	4·86	1,526	2,528	62·8	1·82	3·02	10

* *P. irritans* 3 ♂, *Ct. felis* 1 ♂, 2 ♀; *St. aporus* 2 ♂, 2 ♀.

No comprehensive rat-flea survey of Gampola has previously been carried out although Hirst examined a small series of rat-fleas (52) from this town in 1928, and surveyed the neighbouring town of Nawalapitiya in 1931. The percentage (total) of *X. cheopis* was somewhat higher than that (57.7) found by Hirst for this town, and was considerably higher than that (48.8) found by him for Nawalapitiya. The *X. cheopis* index was more than double that (1.35) obtained by Hirst for the latter town. The rat-flea survey at Nawalapitiya was, however, performed at a different season of the year—in May—and this may have influenced the results.

An analysis of the examinations in respect of fleas collected from rats trapped in the plague infected portion of the town, and outside the infected portion gave the following results :—

	Infected Area.	Outside.
General flea index	C 3·85	C 5·39
	R 4·14	R 4·43
X. cheopis index	C 2·36	C 3·26
	R 2·36	R 3·04
X. astia index	C 1·48	C 2·11
	R 1·79	R 1·39

The percentage prevalence of *X. cheopis* was similar to that given above for the town, except that in residential premises in the infected area it was reduced to 56.9. In the course of the analysis it was observed that there was a marked discrepancy between the flea indices obtained from the first batch of fleas received and from those of subsequent batches. On the first day of the rat trapping campaign a relatively large number of rats was caught in commercial premises in the infected area, but the general flea index was much lower than that obtained on any other day. It is possible that this was due to faulty technique in collecting the fleas, and accordingly it would seem preferable to eliminate the figures for the catch in question. If this be done the figures for the infected area are—General Flea Index, C. 6.61, R. 6.25; *X. cheopis* index, C. 4.06. R. 3.37; *X. astia* index, C. 2.59, R. 2.88. This alteration, however, does not affect the figures for the town as a whole at all seriously, the main difference being that the *X. cheopis* index (commercial) rises from 3.03 to 3.38.

The percentage of females of *X. cheopis* was 48.5, and of *X. astia* 60.5.

Anuradhapura.—November, 1932, to February, 1933.

The results of the examinations were as follows:—

	No. of Premises yielding Rat Fleas.	No. of Rats trapped.	No. of Fleas.	General Flea Index.	No. of *X. astia.*	No. of *X. cheopis.*	Per cent. *X. cheopis.*	*X. astia* Index.	*X. cheopis* Index.	Other Fleas.
C ..	36..	133..	639..	4·81..	272..	367..	57·4..	2·04..	2·76..	—
R ..	21..	41..	227..	5·54..	119..	108..	47·6..	2·90..	2·63..	—
T ..	57..	174..	866..	4·97..	391..	475..	54·9..	2·25..	2·73..	—

No outbreak of plague has yet been recorded at Anuradhapura, but an anti-rat campaign was instituted by the local authorities in November.

The various indices obtained are all much higher than those found by Hirst who, however, noted that his collections were made at the end of the prolonged hot weather when both temperature and humidity were adverse to flea breeding and plague transmission.

X. cheopis appears to be well-established on the rats of both the commercial and residential quarters of the town. The danger of an outbreak of plague at Anuradhapura—particularly during the cooler months of the year—is great, and the responsible authorities would be well-advised to pursue preventive measures with unabated vigour.

(*d*) **House and Bazaar-frequenting Flies.**—Investigations in connection with the fly nuisance at Nuwara Eliya, and into the prevalence and breeding habits of house and bazaar-frequenting flies in Colombo were commenced towards the end of the year. A large amount of material has been collected for examination. The study and determination of this material demands a great deal of time as identification is often a difficult matter usually involving dissection and examination of the male terminalia. So far, 10 species of *Musca* have been recognized. *Musca vicina* and *M. nebulo* appear to predominate in occupied buildings and in the bazaars, although *M. sorbens* is not uncommon in some areas. From the vicinity of cattle the Muscids at present received include the biting species *M. crassirostris*, *M. inferior*, *M. conducens*, *Stomoxys calcitrans*, *S. indica*, and *Lyperosia exigua;* and also *M. gibsoni*, *M. craggi*, *M. pattoni*, and *M. bezzi*. The flesh-feeding flies of the genera *Chrysomyia*, *Lucilia*, and *Sarcophaga* have also been present in considerable numbers, but apart from those of the last named genus have not yet been identified. Six species of *Sarcophaga* have been separated from the Colombo material, viz.:—*S. dux*, Thom. *S. dux*, var *harpax*, Pand., *S. annandalei*, Senior-White, *S. orientaloides*, S-W., *S. kempi*, S-W., *S. knabi*, Park: and two other species have been received, but have not yet been definitely placed.

At Nuwara Eliya, the programme of work included investigations into the distribution and relative prevalence of the various species of the so-called house-flies, their seasonal periodicity and breeding habits. Also the compilation of a register and map showing all fly breeding places of a more or less permanent nature situated within the town; and an inquiry into the flies present in jungle clad areas in its immediate vicinity. The latter inquiry was undertaken owing to the widespread belief among the inhabitants that the fly nuisance (the main fly season extends usually from about February to April or May) is due to invasion of the town by flies which normally breed in the jungle covered slopes of Pidurutalagala and similar places; and that accordingly no purpose would be served by instituting control measures within the town. The work is still in the initial stage, but promises results of considerable interest and practical value.

(6) PUBLICATIONS.

The following papers were published during the year :—

Sparr, E. C. : Notes on a case of diabetes with aphonia and signs of irritation of the cerebral cortex. *Lancet*, July 2, 1932.

Balendra, W. : Report of an interesting dental condition. *Brit. Dent.* J., LIII., (2), 129.

Gunawardene, H. O. : The Stroke in High Arterial Pressure. *Brit. Med.* J., 1932, (1), 180.

Gunawardene, H. O. : The cardiac complications of Ankylostoma infection with special reference to a Presystolic murmur occurring in these cases. *Journal, Ceylon Branch, Brit. Med. Ass.*, XXIX, (1), 45.

Gunawardene, H. O. : A new therapeutic measure in the treatment and control of non-renal High Blood Pressure (Clifford Allbutt's Hyperpiesia) *Ibid.*, XXIX., (2), 22.

Pedris, J. : Notes on a case of Pseudocyesis. *Ibid.*, XXIX., (1), 58.

Gunawardena, T. H. : Congenital Pyloric Stenosis relieved by dilation of the prepuce. *Ibid.*, XXIX., (1), 60.

De Silva, P. C. C. : A case of Thoracophagic Twins with fusion of two lower limbs. *Ibid.*, XXIX., (1), 64.

Paul, M. A. : The acute perforation of a chronic duodenal ulcer. *Ibid.*, XXIX., (2), 1.

Jayasuriya, J. H. F. : A case of Acholuric Jaundice (Haemolytic Icterus) treated by Splenectomy. *Ibid.*, XXIX., (2), 8.

Jayasuriya, J. H. F. : A case of advanced Bronchiectasis treated by Phrenic Evulsion and Major Thoracoplasty. *Ibid.*, XXIX., (2), 15.

X.—MISCELLANEOUS.

(1) MEDICAL EDUCATION.

The Ceylon Medical College was established in 1870. In 1888 recognition was granted by the General Medical Council of the United Kingdom and the diploma became registrable in the Colonial List of the Medical Register under Section 13 of the Medical Act, 1886.

In 1924 the complete extended curriculum of one year's pre-medical study (chemistry, physics, botany, and zoology) which is spent at the University College, and a five years' course in the Medical College was adopted. At the end of the course, the diploma in Medicine, Surgery, and Midwifery is conferred under the designation of L.M.S. (Ceylon).

The College also provides a two years' course of instruction for apothecary students.

The following extracts from the report of the Registrar, Ceylon Medical College, for the year 1932 are given :—

> The chief event in the year was the visit to the College of the Representative of the General Medical Council of the United Kingdom, Colonel Sir Richard A. Needham, C.I.E., D.S.O.
>
> With the sanction of Government Sir R. Needham investigated carefully the facilities for teaching in all branches of study provided in the College and the standard of the examinations required for the Diploma of L.M.S. Ceylon. His observations were embodied in a report to the General Medical Council, which was communicated to the Ceylon Government. As the report indicated serious defects in the teaching, the Government and the College Council were invited to make a statement at the end of March, 1933, as to the measures proposed to remedy these defects and bring the teaching up-to-date.

In the meantime such reorganization of teaching and examinations as could be executed without incurring extra expenditure was taken in hand immediately by the College Council and embodied in the Calendar published in September, 1932.

The course in Bacteriology was enlarged both by extra lectures and practical classes.

Field work in Public Health was added and extra practical work and demonstrations included in the teaching of Parasitology and Forensic Medicine, the latter being put in charge of a team of teachers provisionally so as to secure better work in its various branches.

The system of marking at the Final in Medicine, Surgery, and Midwifery was revolutionized so that much greater weight attached to clinical and practical work than heretofore, and extra examinations in Clinical Ophthalmology, and Clinical Midwifery and Gynæcology were set up; these innovations being introduced at the Final Examination held in December, 1932.

Provision for extra teaching staff is being put forward for inclusion in the next years' estimates.

As the work of training midwives taken over by the College in October, 1931, was found to be for various reasons difficult on the administrative aspect, the scheme was modified. The teaching of pupils was transferred back to the Department of Medical and Sanitary Services from October, 1932, but the examinations for Certificates of Efficiency continue to be held by the College which is thus enabled to control the standard of those who qualify as midwives.

The statistics for the year are as follows:—

Medical.

Number of students qualified for the L. M. S. ..	19
Number of students admitted to the College . ..	24
Total number of students on the rolls	166

Results of Examinations for the academic year 1931-32.

Medical.

	1931. December.		1932. March.		1932. July.		1932. September.		1932. Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
Pre-medical	—	—	41	14	—	—	22	12	63	26
1st Professional	—	—	41	19	32	15	—	—	73	34
2nd Professional, Parts I. and II.	—	—	37	31	17	12	—	—	54	43
Final	12	6	17	3	23	10	—	—	52	19
									242	122

Apothecaries.

Number on the rolls	57
Number admitted	27

Results of Examinations.

	1931. December.		1932. March.		1932. July.		Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
1st Apothecaries	—	—	6	4	25	13	31	17
2nd Apothecaries	5	5	12	4	24	13	41	22
							72	39

Midwives.

Results of Examinations.

	1931. December.		1932. March.		1932. June.		1932. September.		1932. Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
1st Class	5	5	8	5	6	4	6	5	25	19
2nd Class	13	12	16	16	11	10	17	17	57	55
	18	17	24	21	17	14	23	22	82	74

Revenue for the Financial Year Rs. 64,677.50.

Expenditure Rs. 103,498.44.

The annual budget of the Medical College was only Rs. 103,000 (of which amount Rs. 64,000 was repaid to Government in students' fees) and it is difficult, if not impossible, to conduct efficiently a medical school with more than 150 medical students on such limited funds. The College offers no post-graduate courses of instruction.

(2) KING EDWARD VII. (MEMORIAL) ANTI-TUBERCULOSIS FUND.

The Anti-Tuberculosis Institute in Colombo and the Kandana Sanatorium were built and equipped from the Fund and at the end of the year 1930 the construction of the King Edward VII. Sanatorium at Kankesanturai in the Northern Province was completed. Owing to lack of funds for maintenance the Department was unable to open this new Sanatorium during 1931 but, after careful consideration, Government agreed to a scheme for accepting only paying patients and the institution was equipped and opened on January 20, 1932. The fee charged has been Rs. 2 per day and the amount collected during 1932 was Rs. 9,306. The figures for patients admitted and discharged are given in Section VI. of this Report. The results achieved during the first year have been remarkably encouraging and a class of patients has been benefited who would not wish to enter a non-paying sanatorium and yet who could ill-afford prolonged private treatment away from their own homes. As regards the proposal to provide a special children's ward at Kandana, Government was not prepared, owing to the financial situation, to undertake to open the ward if constructed. It was therefore decided to earmark provisionally a sum of Rs. 20,000 for the building and to place the money in fixed deposit until such time as Government might be in a position to open and maintain the ward, when constructed.

It was also decided not to close the Fund until this ward was erected.

(3) CIVIL MEDICAL STORES.

The following extracts from the report of the Superintendent, Civil Medical Stores, are given:—

The working of this Establishment during the past year has been very satisfactory.

All requisitions were complied with promptly, and the ledgers kept up to date. The verification of stocks was satisfactory and the report was completed in December. Kalamazoo visible index ledgers were introduced in October with very satisfactory results

Requisitions.—The number of requisitions received was as follows:—Civil—Drugs, 3,998; quinine, 1,811; sera, &c., 886; provisions, 403; instruments, 1,580; stationery, 2,897; other departments, 401.

Estates.—The number of estate requisitions received was:—Half yearly, 1,095; intermediate, 365; quinine, 902.

The value of drugs supplied on grants was Rs. 247,594 and on payment Rs. 2,491.

The Preparation Section continued to work at its fullest capacity. Further development of this section is prevented by lack of accommodation.

Instrument Section.—Inventory books of instruments have now been issued to all institutions and will greatly reduce the large volume of correspondence and disputes that have always been a feature of transfer returns. These books will be checked annually and already a large number has been dealt with.

Quinine.—12,029 pounds of quinine and 2,118,600 tablets were issued costing Rs. 272,360. A small quantity of Totaquina was imported and issued for trial but no reports have been received.

Expenditure.—An analysis of expenditure is as follows:—

	Rs.
Drugs, dressings, &c.	532,138
Quinine	281,779
Instruments	39,569
General Hospital local purchase	18,372
Other hospitals local purchase	1,657

The vote has been further reduced for the year 1932-33 and the consumption in institutions will be carefully watched.

The amount expended on purchase of opium and general expenses was:—

	Rs.
Purchase of opium	86,157
Incidentals	517

The volume of drugs stocked and issued continues to increase and unless the consumption at institutions is better controlled it will be impossible to meet the demands. In order to check the expenditure at institutions, all requisitions are now priced so that it will be known what each institution has cost for drugs, &c. By this means it should be possible to fix allocations for each hospital and dispensary.

The stock rooms at this Establishment are now very congested, making it difficult to carry out work. The expansion which was considered necessary in 1928 is far more necessary now. As the financial situation does not permit of any expansion, it is not possible to deal with greater stocks than what are now being carried.

(4) SALE OF OPIUM TO REGISTERED CONSUMERS AND VEDARALAS.

No depôts were closed during 1932. There are now 51 depôts in existence. No new consumers were registered during the year.

The total number of registered consumers served from the depôts in the Island during the year was 4,108, as against 4,746 in the previous year and 5,244 in 1930.

3,724 consumers obtained eating opium and 384 obtained smoking opium, as against 4,325 and 421, respectively, in 1931, and 4,797 and 447, respectively, in 1930.

3,443 vedaralas purchased eating opium, as compared with 3,642 in 1931 and 3,555 in 1930.

1,517 pounds of eating opium and 199 pounds of smoking opium which realized Rs. 159,363.13 and Rs. 27,870.08, respectively, were sold to consumers and vedaralas during the year, as compared with 1,846 pounds of eating and 235 pounds of smoking opium sold in 1931, which realized Rs. 194,089.54 and Rs. 32,946.64, respectively.

The total amount realized by the sale of eating and smoking opium was Rs. 187,233.21 as against Rs. 227,036.18 in 1931. The decrease in the sales is due to the 5 per cent. annual reduction in the opium allowed to consumers and to deaths among opium consumers.

The selling price of opium—eating opium 1½ cent per grain and smoking opium 2 cents per grain—remained unchanged.

The above figures show clearly that the number of consumers and the quantity consumed are decreasing year by year.

(5) BUILDING REQUIREMENTS.

The straitened finances of the country have resulted in the virtual stoppage of the Department's large but necessary building programme. The most urgent and important items of the programme still remain—the rebuilding of the Bacteriological Institute, the construction of a Nurses' Home at the General Hospital, without which the training of nurses at this hospital cannot be arranged, and the extension of the De Soysa Lying-in Home. For starting the last of these items some provision had been included in the Estimates but it was not released by the Board of Ministers.

In addition to the foregoing requirements in Colombo, there is a long list of hospitals throughout the Island which need to be rebuilt or extended. The Civil Hospital, Kandy, is the most important of the hospitals in this list and year by year the conditions of overcrowding there become worse. At many places, the staff quarters—particularly for Medical Officers, Apothecaries, and Nurses—are deplorable and in certain instances it has become necessary to withdraw Medical Officers from stations on account of lack of suitable housing for them.

For the repair and upkeep of some 520 hospitals, dispensaries, and quarters, the annual maintenance vote has been reduced from its former figure of Rs. 200,000 to Rs. 125,000 while for the numerous and much needed minor structural improvements and additions only Rs. 35,000 was allowed in contrast with Rs. 220,000 a few years ago.

(6) GENERAL REMARKS.

The general death rate during 1932 was lower than in any previous year. A record was created in 1931 when the rate dropped to 22.1 deaths per 1,000 of population, but in 1932 it fell still further to 20.5. The death rate of 18.7 for the Indian immigrant population on estates was also the lowest yet recorded, having fallen year by year from 35.2 in 1924. There was a slight rise in the infant death rate from 158 in 1931 to 164 in 1932 but the latter rate is still much below the average. The increase in infant deaths took place in the rural areas but for the towns the rate of 178 constitutes a low record. The birth rate of 37 is about average. The natural increase in the population (excess of registered births over deaths) was 88,720, a figure which has only once, (in 1927) been exceeded.

The effects of the economic depression, therefore, do not appear to have been reflected as yet in the state of the public health of the Island.

Of the three new hospital buildings completed during 1931, lack of funds prevented the opening of the Walasmulla and Polonnaruwa Hospitals. The Kankesanturai Sanatorium, the gift of the King Edward VII. Memorial Fund, was however opened to paying patients so as to relieve Government as far as possible of the burden of its maintenance. This arrangement at Kankesanturai has proved most useful, since the Sanatorium on account of its comparatively low fee of Rs. 2 per day, has enabled patients of limited means, during the early stages of their disease when tuberculosis of the lungs can be most readily arrested, to obtain thoroughly sound treatment. The clinical results of the first year's working of the Sanatorium have been very satisfactory and the great majority of the patients on discharge have been fit to return to their usual vocations. The number of patients has not been large, the greatest number at any one time having been 22, but both patients and visitors have remarked on the happy atmosphere and club-like spirit of the Sanatorium.

A beginning was made in the Province of Sabaragamuwa to place the provincial administration of the Department on a sounder basis. The object of the reorganization is to give the Provincial Surgeon full responsibility in his province for all the Department's activities there. In the past the duties of a Provincial Surgeon have consisted chiefly in the supervision and inspection of the Government hospitals and dispensaries and of vaccination. He has had no control over the school medical service, anti-malaria measures, the ankylostomiasis campaign or the work of the Medical Officers of Health, while his powers and duties in relation to outbreaks of infectious disease have been poorly defined. There had been during the last twenty or twenty-five years a progressive decline in the authority and powers of the Provincial Surgeon but under the new arrangement he will be the representative of the Department in his province, who can discuss with the Government Agent any of the Department's activities in his area, who will be in control of all the Department's provincial personnel and in a position to mobilize immediately all the Department's resources in his province to meet a sudden emergency. Now that the procedure has worked satisfactorily for a year in the Province of Sabaragamuwa it will be extended gradually to other provinces.

Attention has been drawn in previous Administration Reports to the inadequate facilities which the Ceylon Medical College offered for training undergraduate students. The visit of Sir Richard Needham in March was the first occasion on which a representative of the General Medical Council had carried out an inspection of the educational training given by the College and of the professional examinations. The conversations and discussions which Sir Richard Needham conducted during his visit with members of the College Council and Academic Committee created much interest and led the Council to appoint a sub-committee to make a comprehensive review of the training given to medical students in Ceylon and of the improvements necessary. The College Council has since put into effect such of the recommendations of the sub-committee as lay within its power and by the end of the year considerable progress had been made. For proposals involving additional expenditure the Council has requested that provision be included in the Government Estimates.

The six nurses who in 1928 were selected to proceed to England to undergo a full course of training in general nursing and in midwifery, returned to Ceylon in June, 1932. The reports on their work while abroad where in almost every instance very good and the nurses all obtained registration by the General Nursing Council and the certificate of the Central Midwives' Board. On return to Ceylon they were given responsible positions as Sisters in the General Hospital, Colombo, the Civil Hospital, Kandy, the De Soysa Lying-in Home, and the Lady Havelock Hospital.

The training of Ceylon nurses in England cannot, however, be considered a satisfactory substitute for the provision of adequate training facilities in Ceylon, and it is regrettable that it has not yet been possible to start the building at the General Hospital, Colombo, of the Nurses' Home which is essential for the establishment of a training school there. Meantime the Department suffers from a serious shortage of trained nurses.

There has been a significant increase in the amount of human plague in Ceylon during the past few years and at the end of 1932 the plague situation was considered to be menacing. This view has since been justified by a number of explosive outbreaks in different parts of the Island during the early months of the present year. In each instance there was evidence that infection had been introduced from Colombo. Infected rats and infected rat fleas are the usual cause of the human outbreaks, and rat plague is firmly established in a limited part of

Colombo but so far has not gained a permanent footing in any other part of Ceylon. The spread of rat plague is usually associated with the grain traffic and during 1931 and 1932 the Chalmers Granaries were infected. These Government granaries were built in 1916 at a cost of Rs. 1,800,000 for the express purpose of safeguarding the interior of the Island against rice-borne plague. They were designed to be rat-free under proper supervision but unfortunately there were faults in the design and the supervision has not been adequate. They have, therefore, been overrun with rats among which plague has become established, and the infection has on various occasions accompanied consignments of rice to the interior of Ceylon and caused local outbreaks of the disease. Measures to deal with the granaries and other infected parts of Colombo are now receiving serious consideration.

The action taken to stamp out the local outbreaks has been successful, but to be successful such action is necessarily drastic and causes dislocation of the normal life and trade of the town where plague breaks out, for many months. A determined effort to free Ceylon from plague by getting rid of the permanent foci of infection in Colombo is, therefore, very necessary.

Smallpox was introduced from India into Colombo in November and from the middle of December, 1932, to the end of February, 1933, the outbreak assumed the proportions of an epidemic, the worst for several decades.

The Department co-operated with the Municipal Health Authorities in taking prompt measures and thanks to the ready response of the public, a vaccination campaign was carried out rapidly and very successfully and soon limited the spread of the disease. Among a small section of the population, however, patients were concealed and vaccination was not willingly accepted and a house to house search for cases and unvaccinated persons was necessary in certain quarters.

Infection spread from Colombo to seven of the nine provinces but only in the Northern and Southern were the outbreaks serious. It was notable that no case occurred on any estate, a fact no doubt attributable to the good state of vaccination in which the Indian immigrant population is maintained as its members pass through Mandapam Quarantine Camp when returning from visits to their homes in India.

The Vaccine Establishment in Colombo by the efforts of its staff, was able to supply the whole of the lymph required during the epidemic, sufficient lymph for 2,335,038 vaccinations being issued.

The investigation into filariasis carried out near Trincomalee by the Medical Entomologist (*vide* Section IX.) has added new and valuable information to our knowledge of this disease as it occurs in Ceylon. In the village of Toppur where the investigation was conducted, 22.7 per cent. of the adult population examined suffered from elephantiasis ("Galle leg") while a further 34.4 per cent. were found to harbour microfilariae (worm embryos) in their blood. The microfilariae were discovered to be those of the worm, *Filaria malayi*, a species hitherto unidentified in Ceylon where *F. bancrofti* was formerly thought to be the only species causing human filariasis. The insect carriers of *F. malayi* were demonstrated to be certain species of *Mansonioides* mosquitoes. The peculiar habit of adhering to the rootlets of the water-plant, *Pistia*, which characterizes the larvae of these mosquitoes, indicates that measures to control the spread of *F. malayi* should aim at the removal of this plant from tanks, irrigation channels, &c., near infected villages.

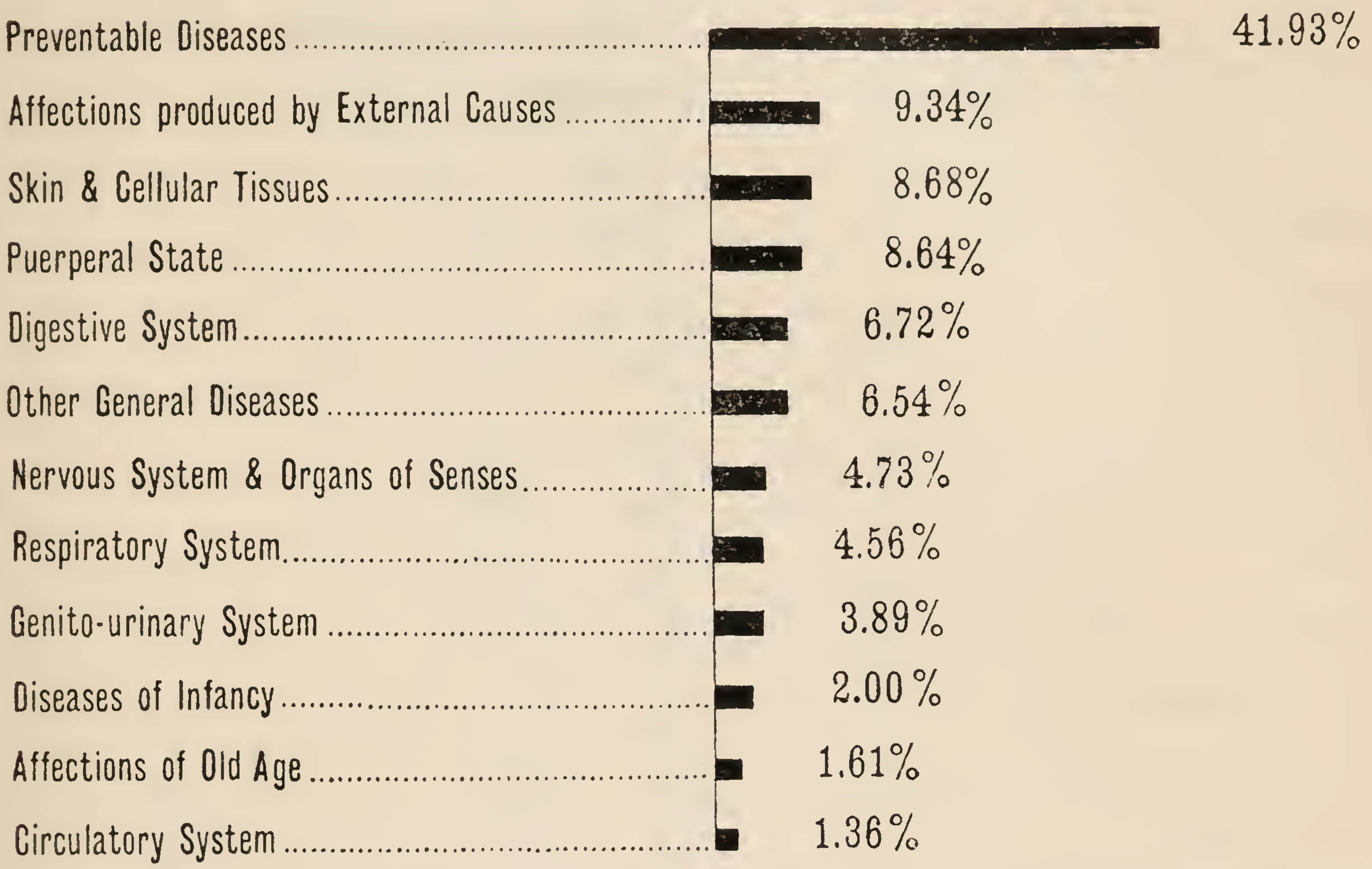
In the Administration Report for the year 1930, reference was made to the need for a survey of leprosy in Ceylon, since data are necessary on which to base a scientific and humane policy for treating the disease and for eventually eradicating it from the Island. As special training and experience are required for such survey work, two Medical Officers of the Department were sent in July to Dr. Ernest Muir of the Calcutta School of Tropical Medicine, who kindly arranged for them a very useful and practical three months' course of training in India.

Since their return to Ceylon the two Medical Officers have undertaken a review of the known cases of leprosy, (some 1,500 in number) in the Hendala and Mantivu Asylums, and on parole in home isolation. They are now engaged in field work in the Eastern Province where they are shortly to be joined by Dr. R. G. Cochrane, Secretary of the British Empire Leprosy Relief Association, who, thanks to the kindness of the Association, will spend six or eight weeks in Ceylon to study the problem and whose assistance and advice should prove of much value in determining the policy for the future.

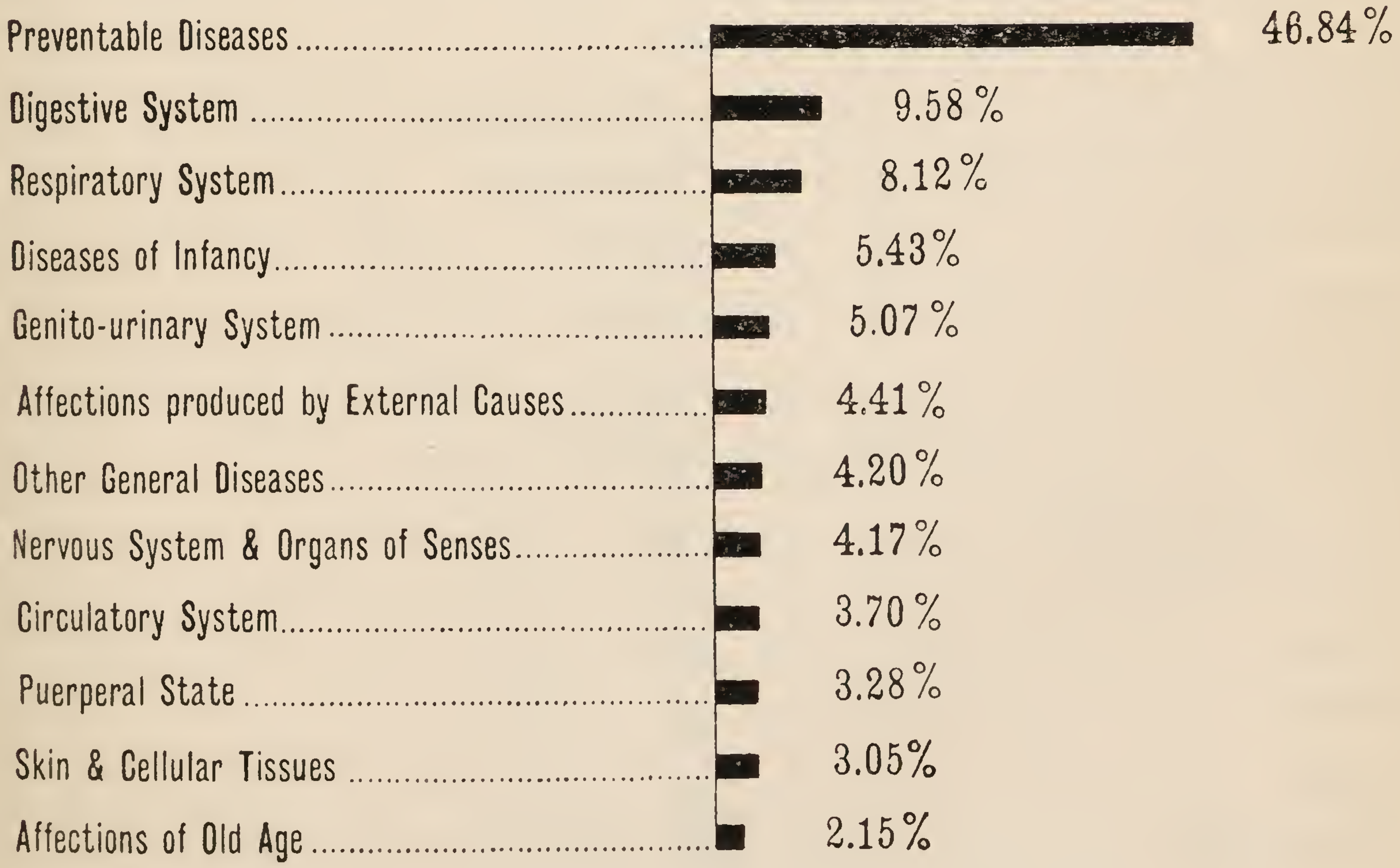
R. BRIERCLIFFE,
Director of Medical and Sanitary Services.

Colombo, April 29, 1933.

A- Chart showing the General Systemic and Preventable Diseases treated at the Government Hospitals during the year 1932 Total Cases- 207,922

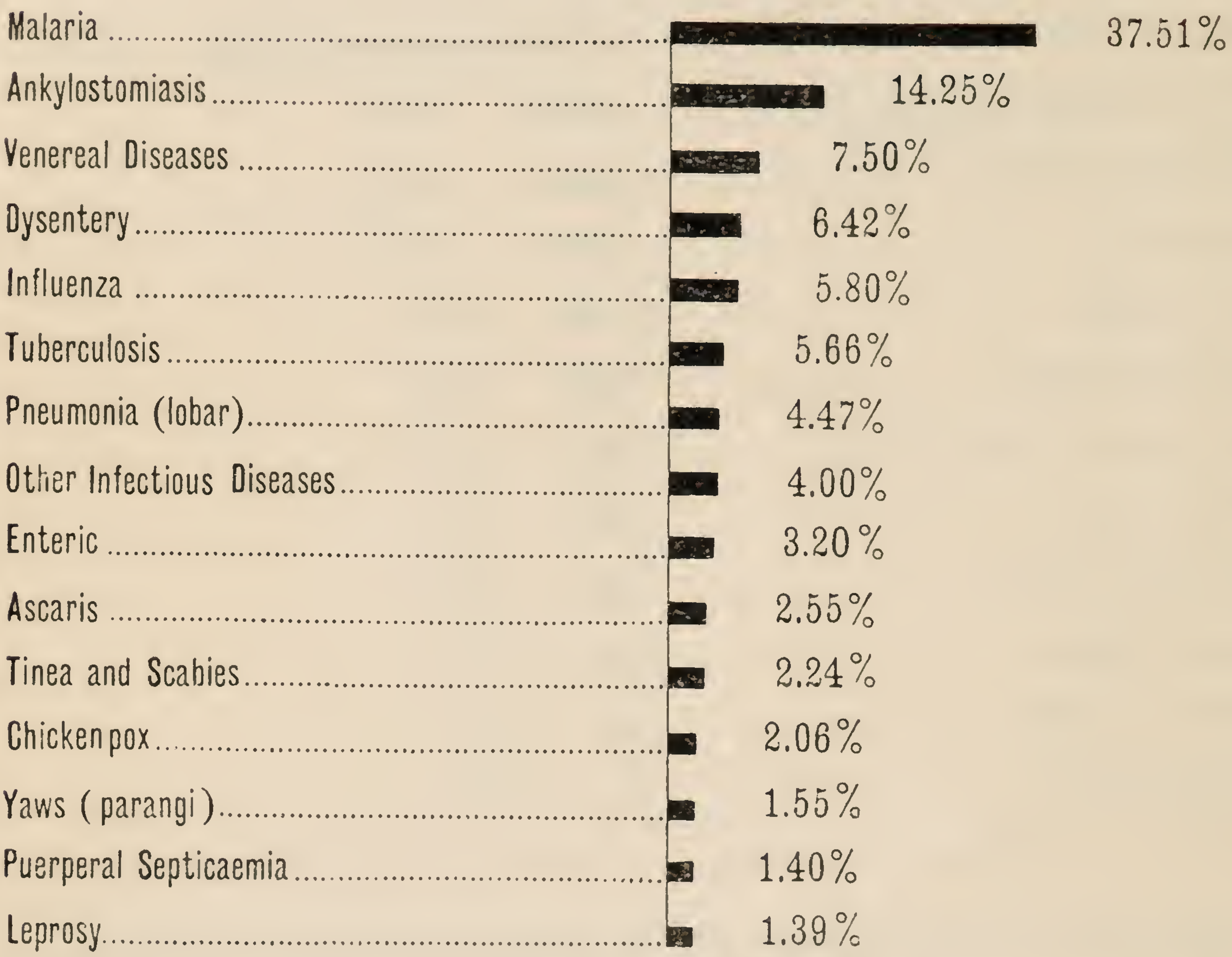


B- Chart showing deaths from General Systemic and Preventable Diseases treated at the Government Hospitals during the year 1932 Total Deaths- 13,011



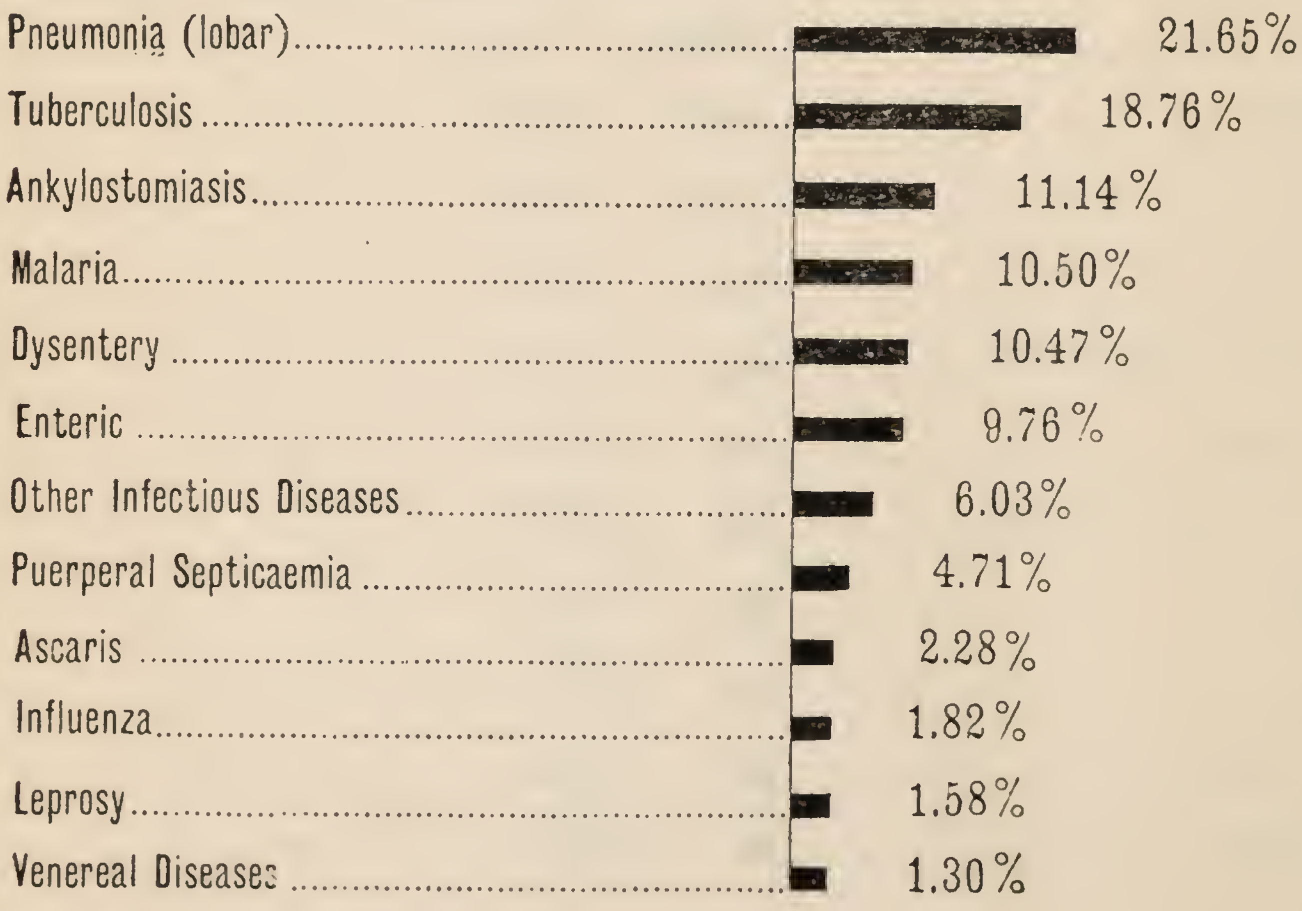
C- Chart showing cases of Infectious Diseases treated at the Government Hospitals during the year 1932

Total Cases- 87,173



D- Chart showing deaths from Infectious Diseases treated at the Government Hospitals during the year 1932

Total Cases- 6,094



I.—Hospital Returns.

Province and District.	No. of hospitals.	No. of beds.	No. of patients remaining in hospital at the beginning of the year 1932.	No. of patients admitted during the year 1932.	Daily average No. of patients in hospital during the year 1932.	Attendants.					Patients discharged.			No. of patients who died in 1932.	Average stay of patients who			Longest period for which any one inmate has stayed.
						Nurses doing no other work.		Servants partially or not at all employed as nurses.										
						Day nurses.	Night nurses.	Not nurses.	Partial day nurses.	Partial night nurses.	Cured.	Relieved.	Not improved.		Died in 1932.	Were discharged in 1932.	Were remaining in 1932.	
Western Province.																		
Colombo ..	18	3,027	2,661	48,595	2,716·06	224	86	346	215	74	24,757	16,328	3,815	4,218	19·84	28·33	39·04	2,935
Kalutara ..	5	374	298	10,223	318·14	10	—	27	21	3	3,839	5,477	205	669	9·29	10·58	9·02	312
Central Province.																		
Kandy ..	13	1,021	666	20,211	657·41	67	12	68	36	20	10,951	7,048	819	1,509	11·65	12·85	15·31	297
Matale ..	2	248	152	5,269	144·15	4	—	23	—	3	1,164	3,728	161	227	5·17	14·21	8·65	98
Nuwara Eliya ..	8	394	244	8,398	291·00	12	1	38	—	2	4,374	3,352	171	440	10·85	13·35	14·92	163
Southern Province.																		
Galle ..	6	525	378	11,179	345·37	27	4	68	2	1	3,703	6,489	329	690	20·12	11·64	13·64	146
Matara ..	2	165	130	4,676	133·51	5	—	14	—	3	1,795	2,530	70	271	8·02	13·27	11·30	95
Hambantota ..	3	111	68	3,570	104·57	7	—	10	—	3	1,361	1,774	57	271	7·59	8·59	12·61	89
Northern Province.																		
Jaffna ..	7	379	277	9,671	296·97	12	2	42	—	1	4,759	4,084	459	357	8·52	17·12	15·99	229
Mannar ..	3	130	70	2,628	67·52	2	—	24	—	—	2,026	407	42	176	7·46	15·55	7·17	92
Mullaittivu ..	2	80	28	1,569	35·02	—	—	6	7	—	1,149	320	18	81	5·45	8·33	7·08	66
Eastern Province.																		
Batticaloa ..	5	351	263	2,818	285·06	9	—	17	11	2	1,531	1,047	50	173	605·04	192·87	168·02	366
Trincomalee ..	1	57	21	1,692	44·85	3	—	8	—	—	165	1,431	1	76	10·69	10·19	19·74	109
North-Western Province.																		
Kurunegala ..	5	426	334	11,700	354·93	12	2	52	—	—	2,771	7,961	267	779	9·74	12·29	11·06	133
Puttalam ..	2	82	57	2,175	55·76	6	1	9	—	—	1,280	728	54	151	6·70	9·19	9·41	100
Chilaw ..	2	115	88	3,273	105·62	2	—	3	14	2	1,973	965	109	214	8·96	12·23	17·24	93
North-Central Province.																		
Anuradhapura ..	4	220	156	4,987	127·13	4	1	36	2	2	3,659	1,030	103	272	3·60	5·91	7·79	76
Province of Uva.																		
Badulla ..	12	723	610	20,312	551·75	16	2	39	32	9	5,980	13,161	351	830	9·28	10·27	11·18	171
Province of Sabaragamuwa.																		
Ratnapura ..	7	542	396	12,028	394·62	13	3	48	—	4	7,828	3,070	271	726	9·66	11·08	11·18	152
Kegalla ..	6	569	405	14,159	394·17	14	—	27	17	26	7,398	6,904	199	615	7·91	9·26	9·77	119
Total ..	113	9.539	7.302	199,133	7,423·61	449	114	905	357	155	92,463	74,834	7,551	12.745	38·28	19·93	19·05	2,935

II.—Cases treated according to Diseases.

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.					
Enteric Group—					
(*a*) Typhoid Fever	151	2,374	554	2,525	157
(*b*) Paratyphoid A	1	29	4	30	6
(*c*) Paratyphoid B	—	7	3	7	—
(*d*) Type not defined	4	225	34	229	119
Relapsing Fever	4	50	5	54	2
Undulant Fever	3	24	2	27	2
Malaria—					
(*a*) Tertian	630	27,495	278	28,125	517
(*b*) Quartan	19	885	10	904	13
(*c*) Aestivo-autumnal	3	214	9	217	1
(*e*) Cerebral Malaria	9	320	185	329	4
(*e*) Cachexia	63	3,058	158	3,121	70
(*f*) Blackwater	—	—	—	—	—
Smallpox	2	87	13	89	72
Measles	1	408	7	409	58
Whooping Cough	9	275	7	284	12
Diphtheria	—	36	14	36	2
Influenza	117	4,942	111	5,059	91
Mumps	7	124	—	131	6
Cholera	—	—	—	—	—
Dysentery—					
(*a*) Amoebic	133	3,024	354	3,157	108
(*b*) Bacillary	64	1,634	198	1,698	76
(*c*) Undefined or due to other causes	24	720	86	744	24
Plague—					
(*a*) Bubonic	—	34	22	34	1
(*b*) Pneumonic	—	—	—	—	—
(*c*) Septicaemic	—	11	9	11	—
(*d*) Undefined	—	14	3	14	—
Leprosy	784	432	96	1,216	814
Erysipelas	6	132	11	138	3
Acute Poliomyelitis	—	12	1	12	—
Encephalitis Lethargica	—	29	3	29	4
Epidemic Cerebro-spinal Fever	—	1	1	1	—
Other Epidemic Diseases—					
(*a*) Rubeola (German Measles)	—	1	—	1	—
(*b*) Varicella (Chickenpox)	58	1,737	7	1,795	77
(*c*) Dengue	1	10	—	11	—
(*d*) Yaws	47	1,305	3	1,352	42
Rabies	—	21	17	21	—
Tetanus	5	309	118	314	9
Tuberculosis, Pulmonary and Laryngeal	548	3,960	1,087	4,508	620
Tuberculosis of the Meninges or Central Nervous System	—	9	3	9	—
Tuberculosis of the Intestines or Peritoneum	—	64	24	64	1
Tuberculosis of the Vertebral Column	1	33	2	34	1
Tuberculosis of Bones and Joints	1	35	2	36	7
Tuberculosis of other organs—					
(*a*) Skin or Subcutaneous Tissue (Lupus)	1	24	1	25	3
(*b*) Bones	1	15	2	16	—
(*c*) Lymphatic System	5	163	4	168	19
(*d*) Genito-urinary	—	26	2	26	—
(*e*) Other organs	—	24	4	24	—

II.—Cases treated according to Diseases.—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES—*contd.*					
Tuberculosis disseminated—					
(*a*) Acute	—	24	9	24	—
(*b*) Chronic	1	3	2	4	—
Syphilis—					
(*a*) Primary	48	1,083	9	1,131	29
(*b*) Secondary	34	649	5	683	30
(*c*) Tertiary	16	153	9	169	6
(*d*) Hereditary	7	121	36	128	5
(*e*) Period not indicated	4	122	2	126	3
Soft Chancre	14	128	—	142	6
A.—Gonorrhoea and its complications	116	3,182	14	3,298	108
B.—Gonorrhoeal Opthalmia	2	15	1	17	—
C.—Gonorrhoeal Arthritis	22	816	2	838	36
D.—Granuloma Venereum	1	4	1	5	—
Septicaemia	8	136	45	144	2
Filarial Diseases	1	35	—	36	—
Acute Rheumatic Fever	11	171	—	182	7
Other Infectious Diseases	8	204	24	212	11
II.—GENERAL DISEASES NOT MENTIONED ABOVE.					
Cancer or other malignant Tumours of the Buccal Cavity	3	398	34	401	14
Cancer or other malignant Tumours of the Stomach or Liver	—	53	24	53	1
Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum	—	36	10	36	2
Cancer or other malignant Tumours of the Female Genital Organs	19	215	20	234	3
Cancer or other malignant Tumours of the Breast	1	57	8	58	—
Cancer or other malignant Tumours of the Skin	1	49	4	50	3
Cancer or other malignant Tumours of Organs not specified	7	213	28	220	9
Tumours non-malignant	4	594	20	598	26
Chronic Rheumatism	99	3,055	11	3,154	80
Scurvy (including Barlow's Disease)	2	8	—	10	—
Pellagra	—	—	—	—	—
Rickets	6	152	33	158	8
Diabetes (not including Insipidus)	16	393	58	409	12
Beri-Beri	—	1	—	1	—
Anaemia—					
(*a*) Pernicious	7	40	10	47	2
(*b*) Other Anaemias and Chlorosis	33	765	26	798	21
Diseases of the Pituitary Body	—	—	—	—	—
Diseases of the Thyroid Gland—					
(*a*) Exophthalmic Goitre	—	20	1	20	3
(*b*) Other diseases of the Thyroid Gland, Myxoedema	—	37	2	37	—
Diseases of the Para-Thyroid Glands	—	14	3	14	1
Diseases of the Thymus	—	—	—	—	—
Diseases of the Supra-Renal Glands	—	2	1	2	—
Diseases of the Spleen	—	38	4	38	—

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
II.—GENERAL DISEASES NOT MENTIONED ABOVE—*above*.					
Leukaemia—					
(*a*) Leukaemia	4	44	1	48	—
(*b*) Hodgkin's Disease	—	9	1	9	—
Alcoholism	1	42	1	43	1
Corrosive Acids	—	37	12	37	1
Metallic Poisons	1	36	3	37	—
Vegetable Alkaloids	—	40	4	40	1
Ptomaine Poisoning	2	5	—	7	—
Other Acute Poisonings	—	23	1	23	—
Other General Diseases—					
Auto-intoxication	20	894	19	914	19
Purpura Haemorrhagica	—	9	2	9	—
Haemophilia	—	1	—	1	5
Diabetes Insipidus	—	32	3	32	2
Undefined	22	1,356	69	1,378	15
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.					
Encephalitis (not including Encephalitis Lethargica)	1	25	15	26	—
Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	1	93	50	94	4
Locomotor Ataxia	1	38	—	39	5
Other affections of the Spinal Cord	5	214	17	219	9
Apoplexy—					
(*a*) Haemorrhage	—	139	69	139	7
(*b*) Embolism	—	24	7	24	1
(*c*) Thrombosis	6	116	44	122	6
Paralysis—					
(*a*) Hemiplegia	20	364	71	384	20
(*b*) Other Paralysis	15	207	26	222	17
General Paralysis of the Insane	—	13	1	13	1
Other forms of Mental Alienation	1	148	9	149	8
Epilepsy	18	334	50	352	5
Eclampsia, Convulsions (non-puerperal) 5 years or over	4	90	14	94	3
Infantile Convulsions	6	263	101	269	8
Chorea	—	19	—	19	—
A.—Hysteria	8	289	2	297	6
B.—Neuritis	12	438	3	450	16
C.—Neurasthenia	33	205	8	238	6
Cerebral Softening	—	3	2	3	1
Other affections of the Nervous System, such as Paralysis Agitans	14	406	32	420	4
Affections of the Organs of Vision—					
(*a*) Diseases of the Eye	71	1,507	—	1,578	74
(*b*) Conjunctivitis	16	1,407	1	1,423	26
(*c*) Trachoma	—	38	—	38	—
(*d*) Tumours of the Eye	—	22	—	22	—
(*e*) Other affections of the Eye	149	2,490	7	2,639	152
Affections of the Ear or Mastoid Sinus	27	530	11	557	23

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.					
Pericarditis	2	49	12	51	1
Acute Endocarditis or Myocarditis	6	88	30	94	3
Angina Pectoris	2	82	16	84	1
Other Diseases of the Heart	4	16	6	20	—
(*a*) Valvular—Mitral	25	687	190	712	31
Aortic	2	85	21	87	3
Tricuspid	—	44	10	44	7
Pulmonary	—	16	3	16	2
(*b*) Myocarditis	6	354	103	360	19
Diseases of the Arteries—					
(*a*) Aneurism	2	25	2	27	—
(*b*) Arterio-Sclerosis	11	79	2	90	1
(*c*) Other diseases	—	142	21	142	2
Embolism or Thrombosis (non-cerebral)	1	38	16	39	1
Diseases of the Veins—					
Haemorrhoids	20	379	7	399	11
Varicose Veins	3	49	—	52	1
Phlebitis	7	84	2	91	3
Diseases of the Lymphatic System—					
Lymphangitis	2	117	3	119	3
Lymphadenitis, Bubo (non-specific)	5	243	3	248	15
Other	—	14	2	14	1
Haemorrhage of undetermined cause	—	26	6	26	—
Other affections of the Circulatory System	2	103	22	105	—
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.					
Diseases of the Nasal Passages—					
Adenoids	—	14	—	14	—
Polypus	4	63	—	67	3
Rhinitis	1	56	—	57	—
Coryza	—	104	2	104	2
Affections of the Larynx-Laryngitis	—	87	7	87	2
Bronchitis—(*a*) Acute	77	2,534	77	2,611	54
(*b*) Chronic	50	1,524	90	1,574	33
Broncho-Pneumonia	51	2,042	668	2,093	51
Pneumonia—(*a*) Lobar	95	3,802	1,309	3,897	105
(*b*) Unclassified	9	135	56	144	13
Pleurisy, Empyema	24	773	73	797	26
Congestion of the Lungs	—	10	—	10	2
Gangrene of the Lungs	—	16	10	16	8
Asthma	47	1,608	35	1,655	25
Pulmonary Emphysema	—	10	4	10	—
Pneumothorax	—	14	2	14	—
Other affections of the Lungs—Pulmonary Spirochaetosis	6	223	34	229	3
VI.—DISEASES OF THE DIGESTIVE SYSTEM.					
A.—Diseases of Teeth or Gums—					
Caries, Pyorrhoea, &c.	9	426	1	435	12
B.—Other affections of the Mouth—					
Stomatitis	7	336	3	343	13
Glossitis, &c.	2	33	—	35	—

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
VI.—DISEASES OF THE DIGESTIVE SYSTEM—*contd.*					
Affections of the Pharynx or Tonsils—					
Tonsillitis	7	638	13	645	16
Pharyngitis	2	103	4	105	—
Affections of the Oesophagus	—	20	2	20	—
A.—Ulcer of the Stomach	4	172	15	176	3
B.—Ulcer of the Duodenum	—	22	2	22	2
Other affections of the Stomach—					
Gastritis	15	740	6	755	17
Dyspepsia, &c.	23	1,262	7	1,285	16
Diarrhoea and Enteritis—					
Under two years	46	1,012	266	1,058	39
Diarrhoea and Enteritis—					
Two years and over	96	2,362	381	2,458	74
Colitis	42	1,160	109	1,202	36
Ulceration	—	110	26	110	—
Sprue	1	12	5	13	3
Ankylostomiasis	461	11,960	679	12,421	446
Diseases due to Intestinal Parasites—					
(*a*) Cestoda (Taenia)	—	30	1	30	1
(*b*) Trematoda (Flukes)	—	—	—	—	—
(*c*) Nematoda (other than Ankylostoma)—					
Ascaris	57	2,175	139	2,232	47
Trichocephalus Dispar	—	—	—	—	—
Trichina	—	—	—	—	—
Dracunculus	—	—	—	—	—
Oxyuris	—	6	—	6	—
(*d*) Coccidia	—	—	—	—	—
(*e*) Other parasites	—	78	4	78	1
(*f*) Unclassified	—	29	—	29	—
Appendicitis	26	597	26	623	15
Hernia	27	520	39	547	24
A.—Affections of the Anus Fistula, &c.	11	441	6	452	18
B.—Other affections of the Intestines—					
Enteroptosis	1	38	11	39	2
Constipation	31	1,306	12	1,337	21
Acute Yellow Atrophy of the Liver	—	3	3	3	—
Hydatid of the Liver	—	—	—	—	—
Cirrhosis of the Liver—					
(*a*) Alcoholic	8	196	40	204	10
(*b*) Other forms	7	224	61	231	5
Biliary Calculus	—	13	—	13	2
Other affections of the Liver—					
Abscess	6	217	39	223	9
Hepatitis	1	288	8	289	8
Cholecystitis	6	91	6	97	4
Jaundice	4	194	18	198	3
Diseases of the Pancreas	2	8	3	10	—
Peritonitis (of unknown origin)	10	226	99	236	4
Other affections of the Digestive System	27	1,474	60	1,501	17

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (non-venereal).					
Acute Nephritis	85	1,408	277	1,493	68
Chronic Nephritis	36	1,158	233	1,194	61
A.—Chyluria	—	5	2	5	—
B.—Schistosomiasis	—	—	—	—	—
Other affections of the Kidneys, Pyelitis, &c.	15	429	52	444	12
Urinary Calculus	6	354	6	360	5
Diseases of the Bladder-Cystitis	18	469	16	487	15
Diseases of the Urethra—					
(*a*) Stricture	8	376	12	384	9
(*b*) Other	6	383	6	389	9
Diseases of the Prostate—					
Hypertrophy	2	93	17	95	2
Prostatitis	2	126	1	128	3
Diseases (non-venereal) of the Genital Organs of Man—					
Epididymitis	10	176	—	186	3
Orchitis	3	244	—	247	8
Hydrocele	6	311	1	317	6
Ulcer of Penis	12	118	—	130	6
Other	7	151	1	158	7
Cysts or other non-malignant Tumours of the Ovaries	4	150	10	154	—
Salpingitis	—	64	—	64	1
Abscess of the Pelvis	9	101	—	110	9
Uterine Tumours (non-malignant)	5	32	—	37	1
Uterine Haemorrhage (non-puerperal)	2	124	3	126	5
A.—Metritis	4	215	5	219	14
B.—Other affections of the Female Genital Organs—					
Displacement of Uterus	21	560	6	581	18
Amenorrhoea	2	61	—	63	—
Dysmenorrhoea	2	134	—	136	—
Leucorrhoea	—	167	—	167	3
Other undefined	9	162	3	171	10
Diseases of the Breast (non-puerperal)—					
Mastitis	—	22	—	22	4
Abscess of Breast	5	115	1	120	6
VIII.—PUERPERAL STATE.					
A.—Normal Labour	288	12,353	112	12,641	398
B.—Accidents of Pregnancy—					
(*a*) Abortion	14	762	11	776	43
(*b*) Ectopic Gestation	—	41	6	41	4
(*c*) Other accidents of Pregnancy	42	1,525	93	1,567	70
Puerperal Haemorrhage	5	56	12	61	2
Other accidents of Parturition	6	298	43	304	6
Puerperal Septicaemia	38	1,179	287	1,217	32
Phlegmasia Dolens	—	16	2	16	1
Puerperal Eclampsia	6	256	58	262	14
Sequelae of Labour	23	493	39	516	19
Puerperal affections of the Breast	2	104	—	106	3
Pregnancy (ante-natal)	64	1,614	44	1,678	52

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1932.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.					
Gangrene	12	558	122	570	24
Boil	12	290	9	302	33
Carbuncle	52	905	13	957	34
Abscess	52	1,825	44	1,877	67
Whitlow	70	1,605	22	1,675	59
Cellulitis	175	3,520	139	3,695	171
A.—Tinea	4	78	—	82	1
B.—Scabies	67	1,804	4	1,871	60
Ulcer	64	2,420	17	2,484	68
Other Diseases of the Skin—					
Brythema	2	162	—	164	10
Urticaria	6	109	—	115	3
Eczema	59	1,685	2	1,744	48
Herpes	4	87	—	91	1
Psoriasis	4	132	1	136	4
Elephantiasis	1	51	2	52	3
Myiasis	4	102	4	106	7
Chigoes	14	108	2	122	4
Cutaneous Leishmaniasis	62	2,128	11	2,190	77
Other undefined	66	1,625	7	1,691	70
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).					
Diseases of Bones—Osteitis	5	260	21	265	9
Diseases of Joints—Arthritis	16	408	9	424	24
Synovitis	4	207	3	211	3
Other Diseases of Bones or Organs of Locomotion	18	267	6	285	11
XI.—MALFORMATIONS.					
Malformations—Hydrocephalus	—	6	1	6	1
Hypospadias	—	—	—	—	—
Spina Bifida, &c.	—	30	4	30	—
XII.—DISEASES OF INFANCY.					
Congenital Debility	44	3,214	418	3,258	62
Premature Birth	2	267	159	269	1
Other affections of Infancy	14	548	112	562	9
Infant neglect (infants of three months or over)	14	71	14	85	9
XIII.—AFFECTIONS OF OLD AGE.					
Senility—Senile Dementia	82	3,195	264	3,277	117
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.					
Suicide by Poisoning	—	8	7	8	—
Corrosive Poisoning (intentional)	—	19	5	19	—
Suicide by hanging or strangulation	—	4	1	4	—
Suicide by drowning	—	1	—	1	—
Suicide by cutting or stabbing instruments	—	2	1	2	—
Other Suicides	—	1	1	1	—
Food Poisoning—Botulism	—	77	7	77	—

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1931.	Admissions in 1932.	Deaths in 1938.	Total Cases treated in 1932.	Remaining in Hospital at end of 1932.
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—*contd.*					
Attacks of Poisonous Animals—					
Snake Bite	1	42	4	43	—
Insect Bite	11	105	—	116	2
Other accidental Poisonings	—	148	13	148	7
Burns (by Fire)	34	819	123	853	53
Burns (other than by Fire)	7	157	15	164	8
Suffocation (accidental)	—	5	1	5	—
Poisoning by Gas (accidental)	—	3	—	3	—
Drowning (accidental)	—	4	—	4	—
Wounds (by Firearms)	13	261	25	274	7
Wounds (by cutting or stabbing instruments	121	3,753	77	3,874	105
Wounds (by Fall)	126	3,892	44	4,018	107
Wounds (in Mines or Quarries)	—	37	—	37	1
Wounds (by machinery)	25	354	5	379	12
Wounds (crushing, *e.g.*, Railway accidents, &c.)	13	600	4	613	4
Injuries inflicted by Animals, Bites, Kicks, &c.	11	439	6	450	12
A.—Over fatigue	—	—	—	—	—
B.—Hunger or Thirst	1	25	5	26	—
Exposure to Heat—					
Heatstroke	—	1	—	1	—
Sunstroke	—	3	—	3	—
Lightning Stroke	—	1	—	1	—
Electric Shock	—	8	1	8	1
Murder by Firearms	—	7	2	7	—
Murder by cutting or stabbing instruments	—	15	15	15	—
Murder by other means	—	—	—	—	—
A.—Dislocation	4	269	1	273	2
B.—Sprain	3	275	—	278	7
C.—Fracture	99	2,254	164	2,353	96
Other external Injuries	153	5,069	41	5,222	61
Deaths by violence of unknown cause	—	150	5	150	3
XV.—ILL-DEFINED DISEASES.					
A.—Diseases not already specified or ill-defined—					
Ascites	4	92	11	96	3
Oedema	—	7	—	7	—
Asthenia	11	508	32	519	16
Shock	1	51	15	52	—
Hyperpyrexia	—	32	—	32	—
Other	41	3,005	62	3,046	74
B.—Malingering	13	208	—	221	9

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